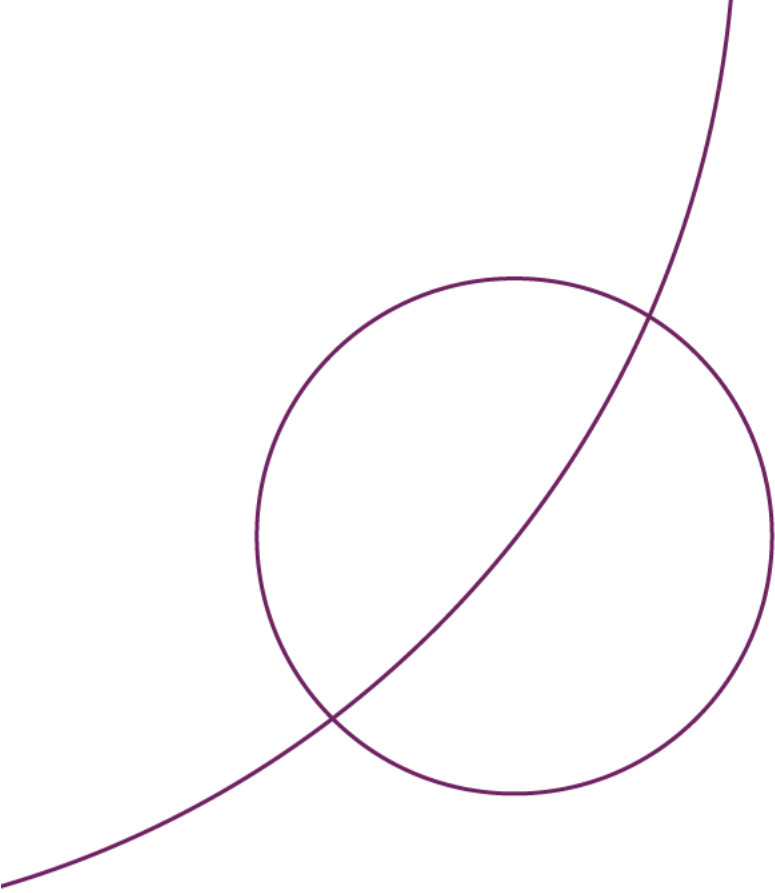




# Lambrigg Repowering and Extension - EIA Scoping Report



**nadara**

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| Acronym         | Definition                                                  |
|-----------------|-------------------------------------------------------------|
| AADF            | Annual Average Daily Flow                                   |
| ALRA            | Abnormal Load Route Assessment                              |
| ALV             | Abnormal Load Vehicle                                       |
| AM              | Amplitude Modulation                                        |
| AoI             | Area of Influence                                           |
| APS             | Annual Population Survey                                    |
| ARWTN           | Assessment and Rating of Wind Turbine Noise                 |
| ATC             | Air Traffic Control                                         |
| BAP             | Biodiversity Action Plan                                    |
| BESS            | Battery Energy Storage System                               |
| BNG             | Biodiversity Net Gain                                       |
| BoCC            | Birds of Conservation Concern                               |
| BPP             | Bird Protection Plan                                        |
| BRES            | Business Register and Employment Survey                     |
| BSI             | British Standards Institution                               |
| CAPEX           | Capital Expenditure                                         |
| CCA             | Climate Change Assessment                                   |
| CCRA            | Climate Change Risk Assessment                              |
| CBDC            | Cumbria Biodiversity Data Centre                            |
| CDA             | Critical Drainage Area                                      |
| CEMP            | Construction Environmental Management Plan                  |
| CHMP            | Cultural Heritage Management Plan                           |
| CIEEM           | Chartered Institute of Ecology and Environmental Management |
| CIRIA           | Construction Industry Research and Information Association  |
| CLVIA           | Cumulative Landscape and Visual Impact Assessment           |
| CNS             | Communications, Navigation and Surveillance                 |
| CO <sub>2</sub> | Carbon Dioxide                                              |
| COP             | Conference of the Parties                                   |
| CRM             | Collision Risk Modelling                                    |
| CROW            | Countryside and Rights of Way Act                           |
| DAS             | Discretionary Advice Service                                |

| Acronym | Definition                                            |
|---------|-------------------------------------------------------|
| DEFRA   | Department for Environment, Food and Rural Affairs    |
| DIO     | Defence Infrastructure Organisation                   |
| DPD     | Development Plan Document                             |
| DTM     | Digital Terrain Model                                 |
| EA      | Environment Agency                                    |
| ECoW    | Ecological Clerk of Works                             |
| EclA    | Ecological Impact Assessment                          |
| EIA     | Environmental Impact Assessment                       |
| ELC     | European Landscape Convention                         |
| ERM     | Environmental Resources Management Ltd                |
| ES      | Environmental Statement                               |
| ETSU    | Energy Technology Support Unit                        |
| FAS     | Flight Activity Surveys                               |
| FTE     | Full-Time Equivalent                                  |
| FWPM    | Freshwater Pearl Mussel                               |
| GCD     | Global Climate Database                               |
| GCN     | Great Crested Newt                                    |
| GHG     | Greenhouse Gas                                        |
| GIS     | Geographic Information System                         |
| GLVIA   | Guidelines for Landscape and Visual Impact Assessment |
| GPG     | Good Practice Guide                                   |
| GSP     | Grid Supply Point                                     |
| GVA     | Gross Value Added                                     |
| HCA     | Habitat Condition Assessment                          |
| HER     | Historic Environment Record                           |
| HE      | Historic England                                      |
| HGV     | Heavy Goods Vehicle                                   |
| HIA     | Heritage Impact Assessment                            |
| HMMP    | Habitat Management and Monitoring Plan                |
| HRA     | Habitat Regulations Assessment                        |
| HSI     | Habitat Suitability Index                             |

| Acronym | Definition                                                        |
|---------|-------------------------------------------------------------------|
| ICCI    | In-Combination Climate Change Impact                              |
| ICAO    | International Civil Aviation Organization                         |
| IDB     | Internal Drainage Board                                           |
| HEMA    | Institute of Environmental Management and Assessment              |
| IFP     | Instrument Flight Procedure                                       |
| IMD     | Index of Multiple Deprivation                                     |
| IPCC    | Intergovernmental Panel on Climate Change                         |
| ISEP    | Institute of Sustainability and Environmental Professionals       |
| JRC     | Joint Radio Company                                               |
| LA90    | A-weighted sound level exceeded for 90% of the measurement period |
| LCA     | Landscape Character Area                                          |
| LCT     | Landscape Character Type                                          |
| LDWA    | Long Distance Walkers Association                                 |
| LERN    | Lancashire Environment Record Network                             |
| LFA     | Low Flying Area                                                   |
| LGV     | Light Goods Vehicle                                               |
| LLCT    | Local Landscape Character Type                                    |
| LLFA    | Lead Local Flood Authority                                        |
| LNR     | Local Nature Reserve                                              |
| LNRS    | Local Nature Recovery Strategy                                    |
| LPA     | Local Planning Authority                                          |
| LSE     | Likely Significant Effect                                         |
| LVIA    | Landscape and Visual Impact Assessment                            |
| MAGIC   | Multi-Agency Geographic Information for the Countryside           |
| MBBS    | Moorland Breeding Bird Survey                                     |
| MBNL    | Mobile Broadband Network Limited                                  |
| MOD     | Ministry of Defence                                               |
| MW      | Megawatt                                                          |
| NATS    | National Air Traffic Services                                     |
| NCA     | National Character Area                                           |
| NCN     | National Cycle Network                                            |

| Acronym | Definition                                         |
|---------|----------------------------------------------------|
| NDC     | Nationally Determined Contribution                 |
| NERL    | NATS En Route Ltd                                  |
| NHLE    | National Heritage List for England                 |
| NNR     | National Nature Reserve                            |
| NPSE    | Noise Policy Statement for England                 |
| NPPF    | National Planning Policy Framework                 |
| NPS     | National Policy Statement                          |
| NSIP    | Nationally Significant Infrastructure Project      |
| NSN     | National Site Network                              |
| NSR     | Noise Sensitive Receptor                           |
| OAM     | Other Amplitude Modulation                         |
| OFCOM   | Office of Communications                           |
| ONS     | Office for National Statistics                     |
| OPEX    | Operational Expenditure                            |
| oCEMP   | Outline Construction Environmental Management Plan |
| oHMMP   | Outline Habitat Management and Monitoring Plan     |
| oOEMP   | Outline Operational Environmental Management Plan  |
| oPMP    | Outline Peat Management Plan                       |
| OS      | Ordnance Survey                                    |
| OUV     | Outstanding Universal Value                        |
| PAC     | Pre-Application Consultation                       |
| PEA     | Preliminary Ecological Appraisal                   |
| PLHRA   | Peat Landslide Hazard Risk Assessment              |
| PoE     | Port of Entry                                      |
| PPP     | Pollution Prevention Plan                          |
| PRoW    | Public Right of Way                                |
| PSR     | Primary Surveillance Radar                         |
| PWS     | Private Water Supply                               |
| RCP     | Representative Concentration Pathway               |
| RLB     | Red Line Boundary                                  |
| RVAA    | Residential Visual Amenity Assessment              |

| Acronym | Definition                                                       |
|---------|------------------------------------------------------------------|
| RVAT    | Residential Visual Amenity Threshold                             |
| SAC     | Special Area of Conservation                                     |
| SES     | Socio-economic Statement                                         |
| SEPA    | Scottish Environment Protection Agency                           |
| SMR     | Sites and Monuments Record                                       |
| SPA     | Special Protection Area                                          |
| SPR     | Source-Pathway-Receptor                                          |
| SPZ     | Source Protection Zone                                           |
| SSP     | Shared Socioeconomic Pathway                                     |
| SSSI    | Site of Special Scientific Interest                              |
| STEAM   | Scarborough Tourism Economic Activity Monitor                    |
| SuDS    | Sustainable Drainage Systems                                     |
| TA      | Transport Assessment                                             |
| TCPA    | Town and Country Planning Act                                    |
| TGN     | Technical Guidance Note                                          |
| TNAC    | Total Noise Assessment Criteria                                  |
| TN      | Target Note                                                      |
| TTA     | Tactical Training Area                                           |
| UHF     | Ultra-High Frequency                                             |
| UKCP18  | UK Climate Projections 2018                                      |
| UKHab   | UK Habitat Classification                                        |
| UKLFS   | UK Low Flying System                                             |
| UNESCO  | United Nations Educational, Scientific and Cultural Organization |
| UXO     | Unexploded Ordnance                                              |
| VP      | Vantage Point / Viewpoint (context-dependent)                    |
| WACA    | Wildlife and Countryside Act                                     |
| WFD     | Water Framework Directive                                        |
| WHS     | World Heritage Site                                              |
| WRI     | World Resources Institute                                        |
| WSI     | Written Scheme of Investigation                                  |
| ZTV     | Zone of Theoretical Visibility                                   |

| Acronym | Definition        |
|---------|-------------------|
| Zoi     | Zone of Influence |

# 1. Introduction

Beaufort Wind Limited (hereafter referred to as “the Applicant”) is the owner of the existing Lambrigg Wind Farm and is a wholly owned subsidiary of Nadara Limited (hereafter referred to as Nadara) proposes to repower the existing Lambrigg Wind Farm through the development of a replacement wind energy scheme. The proposed Lambrigg Repowering and Extension (hereinafter referred to as the “Proposed Development”) would replace the existing operational wind farm, comprising five turbines with a tip height of 72 metres (m), with a new wind farm of up to seven wind turbines with a maximum tip height of up to 200 m, together with associated infrastructure. To accommodate the increased size and number of turbines, the Proposed Development will encompass a larger area of land than the currently operational wind farm, referred to as “the Site”. The Proposed Development will be located at Lambrigg Fell, Cumbria, wholly within the administrative area of Westmorland and Furness Council (“the Council”). The location of the Proposed Development is shown on **Figure 1.1**.

As the Proposed Development is anticipated to have an installed capacity of less than 100 megawatts (MW), it will be subject to the Town and Country Planning Act 1990 planning process, with an application for planning permission anticipated to be submitted to the Council as the local planning authority. As an installation for the harnessing of wind power for energy production (a wind farm), which comprises more than two turbines each with a hub-height exceeding 15 metres, the Proposed Development falls within Schedule 2, Category 3(i) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations). Due to the scale of the Proposed Development the Applicant assumes that an Environmental Impact Assessment (“EIA”) will be required, and proposes to submit these assessments in an Environmental Statement to accompany the future planning application. Accordingly, the development will be an “EIA development” for the purposes of the EIA Regulations.

This Scoping Report (“the Report”) has been prepared by Environmental Resources Management Ltd. (ERM), with additional technical input from Pager Power on behalf of the Applicant. The project team are competent experts with extensive experience in undertaking EIA work for renewable energy developments across the UK and meeting the terms of Regulation 18(5)(a) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

The Report forms the Applicant's written request to the Council, under Regulation 15 of the EIA Regulations, for its opinion (i.e. "Scoping Opinion") as to the information to be provided in the Environmental Statement ("ES").

## 1.1 Planning Background

The existing Lambrigg Wind Farm was granted planning permission by South Lakeland District Council in 1998 (Planning Reference: 5/98/1478) and was originally consented for a 25-year operational period. A subsequent application for a 10-year extension to the operational life of the wind farm was approved in 2023 (Planning Reference: SL/2022/1179). The Proposed Development represents a repowering and extension of the existing wind farm through the installation of larger, more efficient turbines and associated infrastructure.

## 1.2 The Applicant

Nadara brings together 30 years of combined industry experience to become the largest NextGen independent power producer (IPP+) of onshore wind in Europe. Nadara has over 4.3GW of installed onshore wind, solar, biomass, and energy storage across 200 assets in Europe – notably in the UK, Italy, France, Spain and Portugal – and the United States. In England, Nadara is particularly significant because of its strong legacy wind portfolio and operating base. The company is active in extending and upgrading its onshore wind assets, including repowering older wind farms to produce more clean electricity with newer technology.

Nadara's work in England is therefore not just about running existing sites, but also about maintaining long-term generation, supporting energy security, and bringing forward new investment tied to local communities and the wider net-zero transition. The Proposed Development forms part of Nadara's wider programme of repowering and extending renewable energy generation assets in England. ERM has been contracted to prepare this EIA Scoping Report.

## 1.3 Requirement for an EIA and Scoping

The requirement for EIA is determined through the EIA screening process.

The Proposed Development falls within Schedule 2, Category 3(i) of the EIA Regulations, which relates to installations for the harnessing of wind power for energy production (wind farms). As a Schedule 2 development, the need for EIA can be determined by the relevant planning authority, having regard to the selection criteria set out in Schedule 3 of the EIA Regulations, including the characteristics of the

development, its location, and the potential significance of environmental effects. However, given the scale of the Proposed Development the Applicant proposes to voluntarily undertake an Environmental Impact Assessment, with the assessments reported in an Environmental Statement accompanying the planning application.

EIA good practice requires that any EIA undertaken is proportionate to the likely significant environmental effects of the Proposed Development. To support this process, environmental scoping is undertaken to identify the key environmental topics requiring detailed assessment and to define the methodologies that will be applied within the EIA. The scoping process includes consultation with the determining authority and relevant statutory and non-statutory consultees to ensure that the scope of the assessment is appropriately focused on the likely significant effects of the Proposed Development.

## 1.4 Purpose of this Scoping Report

The objective of the Report is to present an initial overview of potential environmental receptors within the Proposed Development and to determine the likelihood of significant effects on these receptors caused by the Proposed Development. This allows statutory consultees to provide an informed opinion of the Proposed Development as well as provide advice and suggestions for the methodology of assessments included, and the structure of, the ES. This will facilitate the adoption of scoping opinion by the Council which sets out the scope and level of detail of the information to be provided in the Environmental Statement.

Under Regulation 15(2) of the EIA Regulations a Scoping Report must include the following:

- “(i) a plan sufficient to identify the land;
- (ii) a brief description of the nature and purpose of the development, including its location and technical capacity;
- (iii) an explanation of the likely significant effects of the development on the environment; and
- (iv) such other information or representations as the person making the request may wish to provide or make”

This Report contains this information in the following sections.

Where the Developer is proposing to ‘scope out’ particular elements of the EIA, information and justification has been provided within this Report.

The Report also contains questions for which it would be useful to receive feedback from statutory consultees, where appropriate. Please note this is not an exhaustive

list, and the Developer would welcome feedback on any issues considered to be relevant to the Proposed Development. A summary of all questions raised in the Report is also provided as Appendix A for ease of reference.

The Report was authored by ERM, with the exception of the **Sections 15.1 and 15.1.5**, which were produced either wholly by, or in collaboration with Pager Power.

The Report is structured as follows:

- Chapter 1: Introduction;
- Chapter 2: Description of the Proposed Development;
- Chapter 3: EIA Methodology;
- Chapter 4: Planning Policy;
- Chapter 5: Landscape and Visual;
- Chapter 6: Ecology;
- Chapter 7: Ornithology;
- Chapter 8: Hydrology;
- Chapter 9: Geology and Peat;
- Chapter 10: Access, Traffic, and Transport;
- Chapter 11: Cultural Heritage;
- Chapter 12: Noise and Vibration;
- Chapter 13: Socio-economics and Tourism;
- Chapter 14: Climate Change and Greenhouse Gas Emissions;
- Chapter 15: Other Issues.

## 2. Description of the Proposed Development

### 2.1 Introduction

The Proposed Development comprises the repowering and extension of the existing Lambrigg Wind Farm through the installation of up to seven wind turbines, with a maximum blade tip height of up to 200 m, together with associated infrastructure. The Proposed Development would utilise and upgrade existing wind farm infrastructure where practicable, including the existing on-site substation.

### 2.2 Need for The Proposed Development

To support the UK Government's legally binding target of achieving net zero greenhouse gas emissions by 2050 and its ambition to accelerate the deployment of low-carbon electricity generation, a substantial increase in renewable energy capacity is required. The Proposed Development would help maintain and enhance renewable energy generation at the existing Lambrigg Wind Farm site through repowering and extension, resulting in an installed generating capacity of less than 100 MW and contributing towards national net zero and energy security objectives.

### 2.3 Proposed Development Site

The Site of the Proposed Development comprises approximately 230 hectares (ha) of land located east of Lambrigg Fell, approximately 5.7 kilometres (km) east of Kendal within the administrative area of Westmorland and Furness, Cumbria. The Site is bounded along its eastern edge by the M6 motorway and is accessed via the existing Lambrigg Wind Farm road network to the south and through Lambrigg Farm to the north. The site boundary is shown on **Figure 1.1**.

The southern part of the site encompasses the existing operational Lambrigg Wind Farm, whilst the northern part is predominantly comprised of moorland, agricultural grassland associated with Lambrigg Farm, and small areas of woodland. Several small watercourses are found within the Site, namely the Sparishaw Beck, Lambrigg Beck, and their respective tributaries. The Proposed Development will avoid the Lambrigg Beck and its tributaries.

Lambrigg Farm is the only residential property located within the Site boundary and is situated in the north-east of the Site. Big Park Farm is located to the south-west of the Site.

The Site is characterised by open upland farmland and moorland landscapes, interspersed with local watercourses, areas of rough grazing and small woodland blocks. The landform generally rises across the Proposed Development towards the north and west, creating an elevated setting suitable for wind energy development. The Proposed Development would expand beyond the footprint of the existing wind farm into adjacent land while continuing the established use of the area for renewable energy generation.

## 2.4 Key Components of The Proposed Development

The Proposed Development layout is shown in **Figure 1.2**. The key components of the Proposed Development will include:

- Temporary construction compounds, laydown and storage areas required during the construction phase;
- Up to seven wind turbines with a maximum blade tip height of up to 200 m;
- Turbine foundations and associated drainage infrastructure;
- New and upgraded access tracks, including associated hardstandings and crane pads;
- Underground electrical cabling connecting the turbines to the on-site substation;
- On-site substation located on or adjacent to the existing Lambrigg Park Wind Farm substation site; and
- Borrow pits, Meteorological Mast and other ancillary infrastructure, if required, to facilitate construction of the Proposed Development.

The Proposed Development will require a connection to the electricity distribution network to facilitate the export of generated electricity. This infrastructure would be subject to a separate consenting procedure by the network operator,.

### 2.4.1 Turbines

**Figure 1.2** shows the proposed turbine locations, with coordinates provided in Table 2.1. The current design comprises seven wind turbines, with locations identified through an initial review of environmental, technical and commercial constraints. The precise turbine locations will continue to evolve through the iterative design process

and will be informed by the findings of environmental surveys, technical assessments, stakeholder consultation and engineering requirements, through the EIA process.

This Scoping Report assumes a candidate turbine with a blade tip height of up to 200 m, representing the current design envelope considered within the study. As the proposed turbines are anticipated to exceed 150 m in maximum blade tip height, aviation lighting is likely to be required in accordance with relevant aviation safety requirements, the design of which will be proposed and assessed in the ES.

**Table 2.1 Proposed Turbine Locations**

| Turbine Number | Turbine Location |          |
|----------------|------------------|----------|
|                | Easting          | Northing |
| 1              | 358771           | 494360   |
| 2              | 358582           | 493850   |
| 3              | 359290           | 494868   |
| 4              | 358917           | 493565   |
| 5              | 359429           | 494413   |
| 6              | 359530           | 493928   |
| 7              | 359527           | 493391   |

## 2.4.2 Access

New permanent access tracks will be required to facilitate the construction, operation and maintenance of the Proposed Development, although existing infrastructure will be utilised and upgraded wherever practicable. The location of existing and new tracks will be submitted with the planning application and be subject to a micro-siting allowance of up to 100m. This is to allow for mitigation by design following detailed ground investigation, and pre-construction environmental surveys.

Existing access points and tracks will be utilised wherever possible to minimise the extent of new land take and ground disturbance. However, localised upgrades, widening works and strengthening of existing infrastructure are likely to be required to accommodate the transportation of wind turbine components and other construction vehicles.

### 2.4.3 Electrical Infrastructure

An upgraded on-site substation will form part of the Proposed Development and is proposed to be located on or adjacent to the site of the existing Lambrigg Wind Farm substation, thereby making use of established infrastructure where practicable. The proposed substation location is situated within the southern part of the Proposed Development, adjacent to the existing operational wind farm infrastructure.

Underground power cables linking the turbines and the on-site substation will be laid in trenches alongside access tracks. These cables would then connect to the substation building, which would incorporate the switchgear and metering equipment. In addition to the grid connection equipment, a control and metering room, telecommunications equipment, an office, and welfare facilities for visiting staff would be housed.

### 2.4.4 Temporary Construction Compound

A temporary construction compound and associated laydown areas will be required to support construction of the Proposed Development. These areas will provide space for site offices, welfare facilities, parking, material storage, secure storage areas, laydown areas and, if required, concrete batching facilities.

### 2.4.5 Borrow Pits

The Proposed Development would require crushed stone to construct new tracks, create hard standing areas for the cranes and lay the turbine foundations. Whether the stone and aggregate would be sourced from an existing on-site borrow pit or delivered to site from external sources will be confirmed during the design process and EIA phase.

### 2.4.6 Development Phases

The decommissioning of the existing Lambrigg Wind Farm will be required to precede the construction of the Proposed Development. The decommissioning will be carried out in line with the variation of the original planning permission (ref. SL/20222/1179). The timing of decommissioning for the operational turbines and construction of the Proposed Development, including potential periods of overlap will be considered in the EIA as appropriate. Alongside the ES, an Outline Sustainable Decommissioning Strategy will be provided.

It is proposed that the operational phase of the Proposed Development will be for a period of 35 years. Following the conclusion of the operational phase the Proposed

Development will be decommissioned, a new consent would be sought to extend the life of, or to repower, the Proposed Development

## 2.5 Grid Connection

The Proposed Development will require a connection to the electricity network; however, the detailed grid connection strategy has not yet been confirmed. It is currently assumed that Proposed Development will connect to the Hutton 400kV substation, approximately 5 km south.

The grid connection will not form part of the consent application, with the responsibility for consenting, constructing and operating the grid connection being the responsibility of the network operator. As the Developer is not applying for consent for the grid connection and is not responsible for related optioneering and design work, it is not possible at this stage to confirm the precise nature, scale and location of works. Notwithstanding those limitations, the grid connection works, comprising the connection works from the onsite wind farm substation to the point of connection to the grid, will be considered as one project for the purposes of the EIA. Accordingly, a grid connection study will be included in the ES, which will consider the potential likely significant effects (where they exist) of the grid connection alone, in-combination with the wind farm and cumulatively with other projects. The assumptions that underpin this assessment will be informed by the level of knowledge available at the time as to the point of connection and related connection works, with any limitations or uncertainties reported in accordance with the requirements under the EIA Regulations.

## 3. EIA Methodology

### 3.1 Introduction

The following section of this Scoping Report sets out the proposed structure and general methodological approach to the EIA.

### 3.2 Consultation

#### 3.2.1 General Approach

Stakeholder consultation is crucial to the EIA process and will occur at all stages. Consultation ensures that regulators and the public are kept informed with developments relating to the Proposed Development and can also make the Developer aware of potential additional constraints to ensure it is designed in such a way that environmental impacts are minimised, and the final design is sensitive to the local community. Responses will be gathered from statutory, non-statutory, and public consultees as part of this Scoping Report and following submission of the ES.

The EIA Regulations and good practice pre-application engagement will inform the approach to consultation throughout the EIA process.

#### 3.2.2 Consultation - Statutory Consultees

Consultation will be undertaken with statutory and non-statutory consultees including but not limited to:

- Westmorland and Furness Council (Local Planning Authority);
- The Environment Agency;
- Natural England; and
- Historic England.

#### 3.2.3 Public Consultation

As part of the pre-application process, the Applicant will undertake community engagement activities to provide residents, businesses and other interested parties with an opportunity to learn about and comment on the Proposed Development. In line with good practice for major planning applications, public consultation events will be held within the local area and will be advertised in advance through appropriate channels, including local media, community noticeboards, project communications and the project website where applicable.

These events will provide an opportunity for members of the public to review information on the Proposed Development, including plans, maps, visualisations and preliminary environmental information, and to discuss the proposals directly with the project team. Where feedback is received, this will be taken into consideration in the design and assessment, where appropriate. All consultation will be reported as part of a Pre-Application Consultation (PAC) Report to be submitted alongside the ES.

## 3.3 ES Structure and Assessment

### 3.3.1 Requirement for EIA

The Proposed Development falls within Schedule 2, Category 3(i) of the EIA Regulations as an installation for the harnessing of wind power for energy production (wind farm). Based on the scale and nature of the Proposed Development, it is anticipated that an EIA will be required.

Accordingly, this Scoping Report has been prepared to identify the environmental topics proposed for assessment and to seek the views of the Council and relevant consultation bodies on the scope and methodology of the Environmental Impact Assessment. The findings of the EIA will subsequently be presented within an ES submitted in support of any future planning application for the Proposed Development.

### 3.3.2 Approach to Scoping

The aim of the Scoping process is to identify potential environmental impacts at an early stage, to determine which elements of the Proposed Development are likely to result in significant effects on the receiving environment (including human receptors), and to establish the extent of baseline surveys and assessment required for the EIA. Scoping has an important role to play in achieving proportionate and effective EIA.

This Report will invite Westmorland and Furness Council and consultees to:

- Specify aspects of the environment and issues relating to these that should be considered and addressed in the EIA (with emphasis on any issues local to the Site);
- Comment on the proposed approach to the EIA;
- Comment on or recommend, where appropriate, assessment methodologies; and
- Highlight other relevant bodies or organisations that may have a vested interest in the scheme or be able to provide relevant information.

Once the Scoping Opinion has been adopted by Westmorland and Furness Council, the response will be analysed, and the relevant points raised therein taken forward and used to inform the assessment process.

This Report therefore provides details of the technical areas which will be considered through the EIA process and included within the ES to meet the information requirements as set out in Schedule 4 of the EIA Regulations.

### 3.3.3 Approach to EIA

EIA is an iterative process aimed at identifying and assessing potentially significant effects arising because of a new development. Any likely effects identified will be used to inform and refine the design of the proposed development.

Where likely significant adverse effects are identified that cannot be avoided through embedded mitigation, suitable mitigation measures to reduce, offset or compensate likely significant effects will be proposed. Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 details the information required to be included within the ES and states (amongst other factors):

*“3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.*

*4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydro morphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.”*

### 3.3.4 Baseline Data Collection

To evaluate the potential environmental effects, the existing environmental conditions will be recorded through field and desktop research. Prior to the fieldwork studies, desktop studies will be undertaken to gain a preliminary understanding of the relevant study areas. Where appropriate and required, site specific baseline field surveys will be undertaken by experienced professionals to provide an understanding of the current condition of the Site and the surrounding area.

The results of these investigations will form the baseline, alongside a prediction of these conditions into the future. Such predictions can involve a high number of variables and be subject to large uncertainties, and as a result, in some cases, the current baseline condition is assumed to remain unchanged throughout the timeframe of the Proposed Development.

The baseline will be used to assess the sensitivity of receptors within the relevant study areas defined for each individual technical discipline.

The approach to describing baseline conditions is set out in each relevant technical chapter. Baseline information is used to inform the layout of the proposed development.

### 3.3.5 Assessment of Impacts and Effects

In order to assess the potential effects arising from the Proposed Development, the significance of such effects will be determined, in accordance with the EIA Regulations. The determination of significance relates to the sensitivity of the resource or receptor being affected and the magnitude of impact. The assessment of effects will combine professional judgement together with consideration of the following:

- The sensitivity of the resource or receptor under consideration;
- The magnitude of the potential impact in relation to the degree of change which occurs as a result of the proposed development;
- The type of effect (i.e., adverse, beneficial or neutral);
- The probability of the effect occurring (i.e., certain, likely or unlikely); and,
- Whether the effect is temporary, permanent and/or reversible.

Each individual technical area will have a specific assessment methodology and will be described in the ES. The assessment methodologies used within the ES will be in line with the standards and guidance detailed in each technical chapter.

### 3.3.6 Mitigation and Enhancement

Where the EIA identifies likely significant adverse environmental effects, The mitigation hierarchy will be followed, with mitigation measures proposed as required. These mitigation measures may be embedded in the design of the Proposed Development or comprise additional mitigation measures. A summary of mitigation measures and residual effects will be included in the ES.

In addition, enhancement measures may be incorporated into the Proposed Development to maximise environmental and social benefits.

### 3.3.7 Assessment of Residual Effects

Considering the suggested mitigation and enhancement measures, the predicted effects will be reassessed to determine whether any significant residual effects remain.

### 3.3.8 Assessment of Cumulative Effects

In accordance with the EIA Regulations, this EIA will also give consideration to 'cumulative effects'. These are effects that result from incremental changes caused by past, present or reasonably foreseeable future actions together with the proposed development. For cumulative assessment, two types of effects will be considered:

- Intra-cumulative: The combined impact of individual effects from the same development (e.g., noise, airborne dust or traffic) on a single receptor; and,
- Inter-cumulative: The combined impact from the effects of several developments that may on an individual basis be insignificant but cumulatively may be significant.

In line with good practice, the methodology to be adopted for assessing the cumulative effects of wind energy developments will be in accordance with any advice received from Natural England and other statutory consultees.

The extent of any cumulative assessment relative to each technical assessment will be agreed during the consultation process and can include both existing and proposed wind farm developments, as well as other forms of development.

At time of writing, it is known that there is one other wind farm that is operational, consented or in planning located within 15 km of the Proposed Development, and two further operational wind farms within 35 km. These developments are shown in **Table 3.1**.

**Table 3.1 Cumulative Developments within 35 km**

| Wind Farm Name                 | Status      | Distance from Proposed Development |
|--------------------------------|-------------|------------------------------------|
| Armistead Wind Farm            | Operational | 6 km south                         |
| Caton Moor Windfarm Repowering | Operational | 30 km south                        |
| Kirkby Moor Wind Farm          | Operational | 34.5km southwest                   |

### 3.3.9 Proposed Monitoring

As a result of the outcomes of some assessments, programmes of monitoring may be required to be implemented where required to measure the efficacy of mitigation measures proposed. All monitoring proposals will be detailed within the ES.

### 3.3.10 Structure and Content of the ES

The content of the ES will broadly follow the specifications detailed within Schedule 4 of the EIA Regulations. The ES will consist of four volumes as follows:

- Volume 1: Main Text
- Volume 2a: Figures Excluding LVIA;
- Volume 2b: LVIA Figures;
- Volume 2c: Visualisations;
- Volume 3: Technical Appendices
- Volume 4: Non-Technical Summary

The technical chapters of the ES will be supported by a Planning Statement, Socio-economic Statement (SES), and Pre-Application Consultation (PAC) Report.

### 3.3.11 Scoping Questions

Questions for all consultees are:

- Q3.1 - Do consultees agree with the general strategy for assessing environmental effects?
- Q3.2 – Do Consultees agree with the approach to assessment of the grid connection for the Proposed Development?
- Q3.3 - Can the consultees provide any further information on developments that they think should be included in the cumulative assessment?

# 4. Planning Policy

## 4.1 Introduction

This chapter of the Scoping Report presents a review of the international agreements, legislative framework, and policy context underpinning the Proposed Development.

Further legislation and policies specific to each Scoping Report topic are outlined in the relevant technical chapters of this Scoping Report.

## 4.2 International Agreements

### 4.2.1 Paris Agreement

The Paris Agreement is a legally binding international treaty on climate change. It was adopted by a total of 195 parties at the United Nations (UN) Conference (COP21) in Paris in December 2015. The Agreement came into effect in November 2016.

The overarching goal of the Paris Agreement is to limit global warming to well below 2 degrees Celsius above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels. This includes adapting to the adverse impacts of climate change, fostering climate resilience and reducing greenhouse gas emissions.

Since 2020, countries have been submitting a national climate action plan, known as Nationally Determined Contributions (NDCs), to the UN Framework Convention on Climate Change (UNFCCC). This plan sets out how the country will reduce greenhouse gas emissions to reach the goals of the Paris Agreement.

The UK submitted its first NDC to the UNFCCC in December 2020, which aimed to reduce all greenhouse gas emissions by at least 68% by 2030 on 1990 levels. This was updated in September 2022 to provide further clarification on targets and an explanation of progress. The UK's 2035 NDC was submitted in January 2025 to UNFCCC with an updated target of 81% reduction of greenhouse gas emissions by 2035 compared to 1990 levels.

## 4.3 Legislative Context

### 4.3.1 Climate Change Act 2008 (as amended)

In June 2019, the Climate Change Act 2008 was amended to increase the UK's commitment to a 100% reduction in greenhouse gas emissions by 2050, otherwise known as net zero. Before this amendment, the Act contained a target of 80% reduction from 1990 baseline levels by 2050.

### 4.3.2 Carbon Budgets

Carbon budgets place a legally binding restriction on the total amount of greenhouse gases the UK can emit over a 5-year period, with the UK Government aiming for net zero carbon emissions by 2050. These are set 12 years in advance through secondary legislation under the Climate Change Act 2008. A total of seven carbon budgets have been set since 2008, covering the period up to 2042, with the budgets being gradually reduced over time to achieve net zero targets. The UK is currently within carbon budget four (CB4), which aims for a 52% reduction on baseline (1990) levels.

Section 18 of the Climate Change Act 2008 requires a final statement to be laid before Parliament following the end of each budgetary period. The statement for carbon budget three (CB3), which covers the period of 2018 to 2022, shows that by the end of the 2022 period, UK net greenhouse gas emissions were 50% lower than base year emissions. CB3 set out a 38% reduction on 1990 levels, therefore the UK has over-achieved within their emission reductions across the first three carbon budgets. Nevertheless, the UK will still need to stay on track within other carbon budgets to meet 2050 net zero targets.

### 4.3.3 Planning Legislation

Primary planning legislation in England includes the Town and Country Planning Act 1990, the Planning and Compulsory Purchase Act 2004 and the Planning and Infrastructure Act 2025. The Proposed Development will be submitted as a planning application to the relevant Local Planning Authority (LPA) under the TCPA.

#### 4.3.3.1 Town and Country Planning Act 1990

The Town and Country Planning Act 1990, section 57 sets out the requirements for planning permission for the carrying out of development of land, and it is under this section that planning permission is sought.

### 4.3.3.2 Planning and Compulsory Purchase Act 2004

The Planning and Compulsory Purchase Act 2004 (2004 Act) established a system of local development planning in England.

Section 38(6) of the 2004 Act requires that planning applications be determined in accordance with the development plan unless material considerations indicate otherwise. The development plan typically comprises the adopted Local Plan and any made Neighbourhood Plans covering the application site.

Section 39 of the 2004 Act requires local planning authorities to prepare development plan documents with the objective of contributing to the achievement of sustainable development, having regard to national policies and guidance issued by the Secretary of State.

### 4.3.4 Environmental Impact Assessment Legislation

#### 4.3.4.1 Town and Country Planning (Environmental Impact Assessment) Regulations 2017

As noted in **Section 3.3.1**, the Proposed Development falls within the scope of Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations). In particular, the development constitutes Schedule 2 development under Section 3(i): installations for the harnessing of wind power for energy production (wind farms).

Where Schedule 2 development is considered likely to give rise to significant environmental effects by virtue of factors such as its nature, size or location, an Environmental Impact Assessment (EIA) is required.

The EIA Regulations implement the requirements of the EIA Directive 2011/92/EU, as amended by Directive 2014/52/EU, into domestic legislation.

The purpose of the EIA process is to ensure that the likely significant environmental effects of a proposed development are identified, assessed and described prior to the determination of a planning application. Where EIA is required, an Environmental Statement (ES) must be prepared and submitted with the planning application.

This Scoping Report has been prepared to request a Scoping Opinion from the LPA under Regulation 15 of the EIA Regulations. The Scoping Opinion will inform the scope and level of detail of the Environmental Statement.

## 4.4 Policy Context

### 4.4.1 Statutory Development Plan

The statutory development plan provides the primary policy framework against which planning applications are assessed. Decisions must be made in accordance with the development plan unless material considerations indicate otherwise. The key documents forming the statutory development plan for the area relevant to the Proposed Development include:

#### 4.4.1.1 South Lakeland District Council Core Strategy (2010).

The Core Strategy sets out the overarching spatial strategy for South Lakeland outside the Lake District and Yorkshire Dales National Parks, covering the period to 2025. It identifies strategic objectives for sustainable development, housing, economic growth, infrastructure, and environmental protection. Although the Core Strategy is now slightly dated, it continues to carry weight in planning decisions until superseded by subsequent Local Plan documents or updates.

#### 4.4.1.2 South Lakeland Local Plan Allocations Development Plan Document (2013)

This Development Plan Document (DPD) identifies site-specific allocations for housing, employment, and other land uses across the district. The Allocations DPD provides detailed land-use policies that guide decision-making for development proposals within the administrative area. However, no relevant policies to be considered in the Proposed Development are included.

#### 4.4.1.3 South Lakeland District Council Development Management DPD (2019)

The Development Management DPD sets out the detailed policies and standards against which planning applications are assessed. It includes policies relating to landscape and visual impact, heritage, biodiversity, renewable energy, and environmental protection, which are directly relevant to the assessment of the Proposed Development.

#### 4.4.1.4 Cumbria County Council Minerals and Waste Local Plan (2017)

The Minerals and Waste Local Plan establishes policies for the sustainable management of mineral resources and waste development across Cumbria. While primarily focused on mineral extraction and waste facilities, certain policies (e.g., safeguarding areas) are material considerations for large-scale developments, including wind energy projects.

## 4.4.2 Material Considerations

### 4.4.2.1 NPPF

The National Planning Policy Framework (NPPF)(2026) is a significant material consideration in the determination of this application. The NPPF provides strong and explicit support for renewable and low-carbon energy development and requires decision makers to accord substantial weight to the climate change and net zero benefits delivered by renewable energy schemes.

Crucially, the framework directs that exceptional weight be given to the specific merits of the repowering and life extension of existing operational sites, strongly reinforcing the principle of development on the original footprint. In addition, applicants no longer need to demonstrate the overall national or local need for renewable energy projects, and Local Development Plans (LDPs) are legally mandated to positively plan for renewable energy to maximize delivery opportunities.

### 4.4.2.2 EN-1 Overarching National Policy Statement for Energy

EN-1 sets out the national policy for delivering major energy infrastructure in England and Wales and is a material consideration in TCPA. Paragraph 3.3.23 states *“a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar”*.

### 4.4.2.3 EN-3 National Policy Statement for Renewable Energy Infrastructure

The NPS for Renewable Energy Infrastructure (EN-3) is to be read in conjunction with EN-1. Paragraph 2.12.2 states that *“the deployment of onshore wind farms is critical in meeting the government’s Clean Power 2030 Mission. The Clean Power Action Plan estimates the need for 27-29GW of operational onshore wind capacity by 2030”*

### 4.4.2.4 Clean Power 2030

The Clean Power 2030 Action Plan places rapid expansion of renewable energy, particularly wind and solar, at the heart of the UK’s strategy to decarbonise the power system by 2030. It sets ambitious capacity targets 27–29 GW for onshore wind, reflecting a significant scaling-up of wind deployment across Great Britain.

### 4.4.2.5 Other documents for material consideration include:

- Onshore Wind Taskforce Strategy, July 2025;
- Cumbria Wind Energy Supplementary Planning Document, 2007;
- Cumbria Good Lighting Guide Technical Note, 2025; and

- Cumbria Landscape Character Guidance and Toolkit Part 2.

## 4.5 Consultation and Scoping Questions

- Q4.1 – Do Consultees agree with the choice of planning Legislation, Policy, and Guidance presented in the preceding section?
- Q4.2 – Are there any additional legislation, policies or supplementary guidance which should be considered in the EIA process.
- Q4.3 - Do you agree the ES does not need to include a planning policy chapter, with the relevant policies referenced in each topic section and overall planning review included in the Planning Statement?

# 5. Landscape and Visual

## 5.1 Introduction

### 5.1.1 General

This chapter of the Scoping Report sets out the scope and proposed methodology to the Landscape and Visual Assessment (LVIA) of the Proposed Development. LVIA is a tool used to identify, describe, and evaluate the nature and significance of likely significant effects that may arise from a development proposal on the landscape as a resource, and on views and visual amenity as experienced by people.

While the approaches to assessing landscape and visual effects are closely linked, landscape and visual effects are typically assessed separately based on the following distinction:

- The assessment of landscape effects comprises an evaluation of effects on the landscape as an environmental resource in its own right, including its constituent elements, aesthetic and perceptual qualities, and overall character; and
- The assessment of visual effects comprises an evaluation of effects on views available to people and on visual amenity, including changes to specific viewpoints and the general experience of the landscape as perceived from key locations.

The assessment of landscape and visual effects resulting from the Proposed Development will include consideration of the proposals as a whole i.e. it will include consideration of ancillary infrastructure such as access tracks, met mast, transformers etc. in addition to the proposed turbines, and will consider the effects arising at both construction and operational phases.

The assessment will consider the long-term effects relating to the operational lifetime of the Proposed Development and the short-term temporary effects associated with the decommissioning of the existing Lambrigg Wind Farm and the construction of the Proposed Development. It is possible that the construction of the Proposed Development will occur simultaneously with the decommissioning of the existing turbines, although whether this is feasible will be subject to site investigations and other factors yet to be determined. The assessment of landscape and visual effects, therefore, adopts a baseline where the existing turbines remain in situ until the construction of the Proposed Development commences.

The LVIA will also consider cumulative developments of a similar type and scale to the Proposed Development that have been submitted for determination.

The chapter is supported by the following figures and should be read in conjunction with the description of the Proposed Development presented in **Chapter 2: The Proposed Development**.

- **Figure 5.1:** Landscape and Visual Assessment Study Area;
- **Figure 5.2:** Landscape Character Areas;
- **Figure 5.3:** Landscape Designations;
- **Figure 5.4:** Viewpoint Location Plan;
- **Figure 5.5:** Turbine Blade Tip Height Zone of Theoretical Visibility to 45 km;
- **Figure 5.6:** Turbine Blade Tip Height Zone of Theoretical Visibility to 20 km; and
- **Figure 5.7:** Comparative Blade Tip ZTV - Existing and Proposed Turbines.

## 5.2 Legislation, Policy and Guidance

### 5.2.1 Legislation

The following legislation is of relevance to the LVIA and will be given consideration as part of the assessment:

- European Landscape Convention (ELC);
- National Parks and Access to the Countryside Act, 1949;
- Countryside and Rights of Way Act (CROW Act), 2000; and
- Environment Act, 1995.

### 5.2.2 Planning Policy

#### 5.2.2.1 National Planning Policy Framework

National Planning Policy Framework (NPPF) 38, sets out the Government's planning policies for England, and how they are expected to be applied.

Chapter 15, Conserving and enhancing the natural environment, Paragraph 187 of the NPPF states, inter-alia, that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

*a) protecting and enhancing valued landscapes... (in a manner commensurate with their statutory status or identified quality in the development plan);*

*b) recognising the intrinsic character and beauty of the countryside...; [and] c) maintaining the character of the undeveloped coast...".*

### 5.2.2.2 Local Planning Policy

The Proposed Development will be assessed in consideration of the Westmorland and Furness Local Plan (LDP) and the associated South Lakeland Local Plan, which forms part of the existing Westmorland and Furness consolidated Local Plan framework. The assessment will also take into account the Cumbria Wind Energy Supplementary Planning Document (CWESPD) and will consider the effects of the Proposed Development on landscape character and perceptual experience, scale and setting, local distinctiveness, landscape and related designations, landscape sensitivity and capacity, as well as the visual effects on views and overall visual amenity.

### 5.2.3 Guidance

The principal source of guidance informing the methodology to be adopted for the LVIA will comprise the Guidelines for Landscape and Visual Impact Assessment (GLVIA), 3<sup>rd</sup> Edition (2013). This guidance will be applied in conjunction with consideration of the following additional reference sources:

- Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment, (2024);
- Natural England (2014) An Approach to Landscape Character Assessment;
- Natural England (2019) An Approach to Landscape Sensitivity Assessment;
- Landscape Institute (2019) Technical Guidance Note 2/19 Residential Visual Amenity Assessment;
- Landscape Institute (2019) Technical Guidance Note 6/19 Visual Representation of Development Proposals;
- Landscape Institute (2021) Technical Guidance Note 02/21 Assessing Landscape Value Outside National Designations;
- NatureScot (2025) Special Landscape Qualities – Guidance on Assessing Effects;
- NatureScot (2024). Guidance on Aviation Lighting Impact Assessment;
- NatureScot (Scottish Natural Heritage) (2017) Siting and Designing Wind Farms in the Landscape Version 3;
- NatureScot (Scottish Natural Heritage) (2017) Visual Representation of Wind Farms (Version 2.2);

- NatureScot (2021) Guidance - Assessing the Cumulative Landscape and Visual Impact of Onshore Wind Energy Developments;
- Cumberland Council (2011) Cumbria Landscape Character Guidance and Toolkit Part 1
- Westmorland and Furness Council (2007) Cumbria Wind Energy Supplementary Planning Document Part 2;
- Westmorland and Furness Council (2014) Cumbria County Council Cumulative Impacts of Vertical Infrastructure: Part 2 The Assessment;
- Yorkshire Dales National Park Authority (2020) Yorkshire Dales National Park Landscape Character Assessment; and
- Lake District National Park Authority (2021) Lake District National Park Landscape Character Assessment and Guidelines.

## 5.3 Consultation

Consultation on the scope of the LVIA will be carried out with the Council, Natural England, the Lake District National Park Authority and the Yorkshire Dales National Park Authority in the first instance.

The consultation will address consideration of matters such as the daytime and hours of darkness viewpoints to be referred to in the LVIA and the scope of the cumulative assessment.

Consultation on landscape and visual matters with the public on the Proposed Development will also be undertaken, primarily through public exhibition events. A Pre-Application Consultation (PAC) Report explaining the consultation carried out with the local communities about the Proposed Development will also accompany the application. Early consultation is key in the development process, and throughout the Developer will ensure that local communities and stakeholders are given the opportunity to provide feedback and are kept informed of project progress.

## 5.4 Approach and Methodology

### 5.4.1 Assessment Methodology

The Proposed Development has the potential to affect a range of landscape and visual resources during its construction, operation, and decommissioning, including:

- Physical features and elements of the landscape within the Site (through alteration and/or removal);

- The landscape character of the Site and its wider surroundings;
- Designated landscapes, recognised for their special landscape qualities and/or scenic value; and
- The views and visual amenity experienced by people in the surrounding area.

The LVIA will consider the potential for likely significant effects of the Proposed Development on both landscape and visual receptors, defined as follows:

- Landscape Receptors – ‘...the constituent elements of the landscape, its specific aesthetic or perceptual qualities, and the character of the landscape’; and
- Visual Receptors – ‘...the people who would be affected by changes in views or visual amenity at different places.’

The LVIA will adopt a structured methodology that integrates objective analysis and professional judgement.

The LVIA will be undertaken through a combination of desktop study and field surveys (including photography), with subsequent analysis and assessment. Full details of the approach and methodology will be provided within the LVIA chapter of the ES.

#### 5.4.2 Assessment of Likely Significant Effects on Landscape Receptors

For landscape receptors the assessment of likely significant effects will require consideration of the nature of the landscape receptor (sensitivity of the receptor) and the nature of the effect on the receptor (magnitude of change). GLVIA3 states that the nature of landscape receptors should be assessed in terms of the susceptibility of the receptor to the type of change proposed, and the value attached to the receptor. The nature of the impact on each landscape receptor will be assessed in terms of scale, geographical extent, duration and reversibility.

The sensitivity of landscape receptor will be assessed in terms of the susceptibility of the receptor to the type of change or development proposed, and the value attached to the landscape. The magnitude of change will be assessed in terms of the scale, geographical extent, duration and reversibility of the effect.

The assessment of the level of effect on landscape receptors will be informed by consideration of the sensitivity of the landscape receptor and the magnitude of landscape change. Levels of landscape effect will be identified as none, negligible, minor, moderate or major where all moderate and major landscape effects will be considered significant in the context of the EIA Regulations.

The assessment will focus on direct effects on the host landscape character area and landscape character areas in close proximity to the Proposed Development where there is potential for significant adverse indirect effects. Landscape character areas

that are not in proximity to the Proposed Development are unlikely to experience perceived significant adverse effects on the features which define the landscape character area and as such they will not be assessed as part of the LVIA.

### 5.4.3 Assessment of Effects on Visual Receptors

Changes in views may be experienced by people at different locations within the Study Area including static locations such as might be experienced from settlements and promoted viewpoints and whilst moving through the landscape (normally referred to as sequential views, e.g. from roads and recreational routes).

GLVIA3 states that the sensitivity of visual receptors should be assessed in terms of the susceptibility of the receptor to change in views and/or visual amenity and the value attached to particular views. The magnitude of change should be assessed in terms of the scale, geographical extent, duration and reversibility of the effect.

The sensitivity of visual receptors will involve consideration of the relationship between the receptor's susceptibility to change, and the value attached to a view. The rationale for judgements of sensitivity for each receptor will be clearly set out in relation to both its susceptibility and the value of the view at that location.

The magnitude of change will be assessed in terms of the scale, geographical extent, duration and reversibility of the visual effect.

The assessment of the level of effect on visual receptors will be informed by consideration of the sensitivity of the visual receptor and the magnitude of visual change. Levels of visual effect will be identified as none, negligible, minor, moderate or major where all moderate and major visual effects will be considered significant in the context of the EIA Regulations.

### 5.4.4 Significance of Effects

The objective of the assessment of the Proposed Development is to predict the likely significant effects on the landscape and visual resource. In accordance with GLVIA3, professional judgement will be applied to the assessment of all effects and reasoned justification will be presented in respect of the findings of each case.

The significance of landscape and visual effects will be assessed through consideration of the sensitivity of the landscape or visual receptor and the magnitude of change that will result from the addition of the Proposed Development.

Typically, a significant effect occurs where the Proposed Development will result in a defining influence on a landscape or visual receptor. A not significant effect will occur where the resulting effect of the Proposed Development is not material, and the

baseline characteristics of the landscape or visual receptor continues to provide the definitive influence.

**Table 5.1** provides an illustrative significance matrix illustrating how combinations of sensitivity and magnitude of change ratings can give rise to significant effects. The matrix also gives an understanding of the threshold at which significant effects may arise (ratings highlighted in bold are considered to be significant). Moderate levels of effect have the potential, subject to the assessor's professional judgement and relevant guidance, to be considered as significant or not significant, depending on the sensitivity and magnitude of change factors evaluated. The rationale to the judgement will be set out as part of the assessment.

**Table 5.1 Significance Matrix (Illustrative)**

|                     |            | Sensitivity           |                       |                 |            |
|---------------------|------------|-----------------------|-----------------------|-----------------|------------|
|                     |            | High                  | Medium                | Low             | Negligible |
| Magnitude of Change | High       | <b>Major</b>          | <b>Major/Moderate</b> | <b>Moderate</b> | Minor      |
|                     | Medium     | <b>Major/Moderate</b> | <b>Moderate</b>       | Minor           | Negligible |
|                     | Low        | <b>Moderate</b>       | Minor                 | Minor           | Negligible |
|                     | Negligible | Minor                 | Negligible            | Negligible      | Negligible |
|                     | None       | None                  | None                  | None            | None       |

### 5.4.5 Study Area

Drawing from NatureScot guidance the LVIA will consider an initial Study Area extending to a 45 km radius from proposed turbine locations (refer to **Figure 5.1**). Review and refinement of this Study Area will be undertaken as the layout to the Proposed Development is finalised to ensure a proportionate approach and focus on where potentially significant effects will arise.

Preliminary analysis of the ZTV for the Proposed Development (**Figure 5.5**) in conjunction with an initial understanding of the baseline conditions of the Site and its surrounding context indicates that the potential for significant effects would be largely concentrated within an area in close proximity to the site of the Proposed Development. In this regard it is proposed that the assessment of landscape and visual effects focusses on a study area extending to 20 km as a proportionate

approach focussing on the identification of potentially significant landscape and visual effects. The extent of this study area and visibility mapping is shown on **Figure 5.6**.

The assessment of cumulative effects resulting from other wind energy developments will consider other developments out to a radius of 60 km from the site of the Proposed Development. As the assessment is progressed, as with the main assessment, the study area will be reviewed and reflect a proportionate approach with a focus on where potential significant cumulative effects are likely to arise.

### 5.4.6 Visualisations

Visualisations will be produced for the Proposed Development for viewpoint locations which will be agreed with key consultees through this scoping process and consultation.

The visualisations will be prepared in accordance with Visual Representation of Development Proposals (Landscape Institute Technical Guidance Note 06/19 (July 2019)). If alternative approaches to the preparation and presentation of visualisations are required these will be discussed as part of the consultation process with statutory consultees. The viewpoint locations proposed for inclusion in the LVIA relative to the Proposed Development are shown on **Figure 5.4**. The assessment will include the provision of night-time visualisations the locations to which will be agreed through consultation.

### 5.4.7 Cumulative Effects

The Cumulative Landscape and Visual Impact Assessment (CLVIA) will be carried out in accordance with the principles outlined in GLVIA3, Planning Inspectorate and NatureScot guidance (Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments)<sup>1</sup>.

The assessment of cumulative effects will include consideration of planned wind farm developments within a 60 km radius Study Area with a focus on those likely to give rise to a significant adverse cumulative effect by virtue of proximity to the Proposed Development and/or scale.

Wind farms considered will include developments under construction, consented developments awaiting implementation and proposals awaiting determination within the planning process with design information in the public domain. Sites at screening and scoping stage will not be considered as part of the CLVIA as the information

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<sup>1</sup> NatureScot (2021) Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments. Available online at: <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments> (Accessed August 2026)

relating to these is likely to be limited and subject to change when submitted for determination. Existing wind farms will be considered as part of the main assessment as they feature within the baseline conditions within the Study Area. Small scale, single turbines will not be considered as part of the CLVIA as they are unlikely to give rise to significant adverse effects.

Should further developments emerge during the EIA process, these will also be considered up to three months prior to submission of the application.

#### 5.4.8 Aviation Lighting/Night-time Assessment

In the interests of aviation safety, structures, including turbines greater than 150 m in height, require visible aviation lighting in accordance with the Civil Aviation Authority (Air Navigation) Order 2016<sup>2</sup>. Potential impacts arising from the necessity for visible lighting (which typically consists of 2000 candela red lights mounted on the turbine nacelle) will be a key consideration. Informed by current NatureScot visualisation guidance and scoping advice the assessment will consider the effects of aviation lighting.

The assessment will be carried out as part of the LVIA and be included within a technical appendix to the ES. Visibility of the turbine lighting from each LVIA viewpoint will be considered, however the night-time/hours of darkness assessment will focus on locations at which significant effects will be anticipated and will be agreed through consultation with Westmorland and Furness Council and the NNPA's.

#### 5.4.9 Residential Visual Amenity Assessment

LVIA addresses public views and overall amenity. Conversely a Residential Visual Amenity Assessment (RVAA), concentrates on private views and individual amenity, serving as a resource for decision makers when evaluating potential effects on residential amenity within the planning balance.

As the local authority, Westmorland and Furness Council will confirm the requirement for a RVAA. In the event that a RVAA is required, the assessment will be undertaken in accordance with the guidance provided in the Landscape Institute's Technical Guidance Note TGN 02/19 and will consider the visual effects on residential properties within 2 km of the Proposed Development. The RVAA will identify any properties where residents would be likely to experience adverse visual effects to the degree that the Residential Visual Amenity Threshold (RVAT) would be reached.

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<sup>2</sup> Civil Aviation Authority (2016) Policy and Guidance on Wind Turbines. Version 6. CAP764. Available online at: <https://www.caa.co.uk/publication/download/14561> (Accessed August 2026)

## 5.5 Landscape and Visual Baseline

### 5.5.1 The Site and Its Surroundings

The location of the Proposed Development is illustrated on **Figure 5.1**. The Proposed Development would be located on Lambrigg Fell within the extents of the existing Lambrigg Wind Farm, bordering the M6 to the east and the A684 to the north. The settlement of Lambrigg is located approximately 0.6 km to the north, with Killington Reservoir located 1.5 km to the south of the Site, and the settlement of Millholme 3.8 km to the southwest.

The landform of the Site and its surroundings is typical of Silurian gritstones, forming low fells ranging between 200 m and 300 m AOD. The area comprises moorland, craggy outcrops, scattered woodland, and improved pasture, with rising ground to the northwest culminating in Lambrigg Fell (338 m AOD).

Access to the Site is provided by a network of existing tracks, bordered by watercourses, which currently serve the operational Lambrigg Wind Farm. These tracks connect to the wider road network via the A684, the nearest major road, which links to the M6 motorway, forming the main trunk road connection to the Site.

### 5.5.2 Landscape Character

The location and extents of Landscape Character Areas and types in relation to the Proposed Development are shown on **Figure 5.2**. The Site falls within National Character Area (NCA) 19: South Cumbria Low Fells. At a local level the Site falls within Local Landscape Character Type (LLCT) Type 11: Upland Fringes, specifically Subtype 11b: Low Fells, which is found to the east of Kendal, around Hay Fell and Lambrigg Fell.

Key characteristics of the Upland Fringes Subtype 11b comprise the following:

- Rolling low fells with rocky outcrops;
- Open improved pasture;
- Some areas of bracken, moorland and heather;
- Small woodlands and scrub on the steeper slopes and by farms; and
- Distant views along Kent and Lune valley.

The Upland Fringes (Subtype 11a: Foothills) occur along the North Pennines scarps, extending to the south, east, and west of the Lake District fells. This subtype comprises the key characteristics of the following:

- Rolling, hilly or plateau farmland and moorland;

- Occasional rocky outcrops;
- Hills are dissected by numerous streams and minor river valleys;
- Areas of improved grassland, unimproved heathland and extensive conifer plantations;
- Semi-natural woodland in the small valleys; and
- Large areas of farmland are bounded by stone walls and hedges.

Immediately adjacent to the host Upland Fringes are a range of LLCTs, including Type 7: Low Drumlins to the west and south, Type 9: Intermediate Moorland and Plateau to the south, and Type 13: Fells and Scarp to the north. Within the Lake District National Park, located to the north and west of the Site beyond the LLCTs, Areas of Distinctive Character and the associated Landscape Character Types (LCTs) and Subtypes are defined in the Lake District National Park Landscape Character Assessment and Guidelines. To the east of the Site, within the Yorkshire Dales National Park, 19 Landscape Character Areas (LCAs) have been identified and are described in the Yorkshire Dales National Park Landscape Character Assessment.

### 5.5.3 Landscape Designations and Protected Landscapes

The location and extents of designated and protected landscapes in relation to the Proposed Development are shown on **Figure 5.3**. Landscapes recognised for their natural beauty and scenic quality may be designated at international, national, or regional/local levels, and are typically afforded protection through planning policy. Such landscape designations are an important consideration in determining the sensitivity and value of landscape and visual receptors, as they reflect the recognised importance of the landscape resource.

The Proposed Development is not located within any designated or protected landscapes therefore, no direct effects on such areas are anticipated. However, landscape designations and protected landscapes located within the Study Area that could be indirectly affected by the Proposed Development have been identified as follows:

- The Yorkshire Dales National Park is located approximately 1.9 km to the east of the Proposed Development at its nearest point; and
- The Lake District National Park is located approximately 2.6 km to the north of the Proposed Development at its closest point, with additional areas extending to the west.

As part of the LVIA an assessment of the effects of the Proposed Development on the special landscape qualities of the national parks will be undertaken. This assessment

will draw from the guidance provided in NatureScot's Special Landscape Qualities – Guidance on Assessing Effects which promotes a four-step process. These steps comprise:

- Step 1 – Review and describe the proposal
- Step 2 – Identify the SLQs that may be affected by the proposal
- Step 3 – Assessment of effects on SLQs and design objectives
- Step 4 – Summary of significant effects on SLQs.

The assessment will:

- focus on the likely significant effects on relevant SLQs of the national parks;
- be proportionate to the scale and nature of the proposal; and
- provide a clear explanation of the reasoning underpinning judgements so they can be understood.

#### 5.5.4 Views and Visual Amenity

The assessment of effects upon views and visual amenity will consider the changes to views and visual amenity experienced by people within the Study Area and focus on receptors likely to be significantly impacted by the Proposed Development.

Potential sensitive visual receptors include people living, working and passing through the study area (via road, rail or other forms of transport), those engaged in recreational activities and those visiting promoted landscapes or attractions.

The provisional list of visual receptors is summarised in **Table 5.2**.

**Table 5.2 Visual receptors (within the 20 km Study Area)**

| Visual Receptors                    | Distance and Direction to the Nearest Turbine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Settlements and Scattered Dwellings | <p>Settlements within the study area include Kendal, Staveley, Sedbergh, Summerlands, Kirkby Lonsdale, Endmoor, Milnthorpe, Heversham, Levens, Sedgwick, and Natland.</p> <p>In addition to the settlements a number of scattered dwellings are present within the study area. Those in close proximity to the Proposed Development include:</p> <ul style="list-style-type: none"> <li>• Big Park Farm, approximately 610 m southwest of the existing Lambrigg Wind Farm; Lambrigg Farm, approximately 630 m northeast; Moorcock Hall, approximately 500 m east; Holme Park Farm, approximately 830 m northeast; Green Dykes, approximately 910 m northeast; Hutton Park, approximately 1.6 km southwest; and Lakethwaite, approximately 1.55 km northeast.</li> </ul> |
| Transport Routes                    | The study includes a number of transport routes. These include:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Visual Receptors                                                                                       | Distance and Direction to the Nearest Turbine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Long Distance Recreational Routes, PProWs, National Cycle Routes Network (NCN), and Local Cycle Trails | <ul style="list-style-type: none"> <li>The M6, A684, A685, A683, B6256, A6, A65, A5284, A590, and A591, as well as Old Scotch Road. The West Coast Main Line (Lake District Railway) also passes through the wider landscape.</li> <li>Recreational routes within the study area comprise footpaths and cycleways. They include: <ul style="list-style-type: none"> <li>National Cycle Network (NCN) Route 70, located approximately 2km northwest of the Proposed Development along the A6 at its nearest point; the River Lune Valley Route (cycle route); the Bowderdale Trail (cycle route); the Lancaster Canal Trail (walking route); the long-distance walking routes Dales Way and Dales High Way, and the regionally promoted National Trails.</li> </ul> </li> <li>The nearest paths include CU/518/005, CU/559/018#2, CU/518/006, CU/546/002, CU/559/020, CU/559/018#1, and CU/524/008.</li> </ul>                                                                                              |
| Recreational and Visitor Attractions                                                                   | <p>Recreational and visitor attractions within the study area include:</p> <ul style="list-style-type: none"> <li>Killington Reservoir, a popular visitor attraction, and several elevated walking destinations within the Yorkshire Dales National Park, including The Calf Summit (Howgill Fells), Calders Summit, Rough Fell Sheep and Historic Sheep Pen, and Arant Haw Summit Cairn, which serve as key viewpoints and destinations for walkers.</li> <li>Other notable recreational and scenic locations include Sedgwick House, The Mushroom Shelter at Scout Scar Summit, The Helm Trig Point, Brunt Knott Summit, Potter Tarn, Gurnal Dubs Tarn, and Paddy Lane Viewpoint.</li> <li>Additional visitor attractions and leisure destinations within the study area include Levens Hall, Lakeland Maze Farm Park, Sedbergh Golf Club, Sizergh Castle, Farleton Knott, and Crabtree Clay Shoot, as well as the camping and glamping sites at Warth Hill (Gatebeck) and Long Valley Yurts.</li> </ul> |

### 5.5.5 Proposed Viewpoints

The assessment will be supported by representative viewpoints illustrating views as experienced by key landscape and visual receptors from publicly accessible locations around the Proposed Development. The viewpoint locations will be agreed with key consultees, including Westmorland and Furness Council. The proposed list of viewpoint locations is provided in **Table 5.3**. The locations of the proposed viewpoints relative to the Proposed development are illustrated on **Figure 5.4**.

Table 5.3 Proposed Viewpoints

| Viewpoint No. | Viewpoint Name                      | Viewpoint Grid Reference | Distance and Direction to the Nearest Turbine | Receptor                                                                                                                                                                                                                |
|---------------|-------------------------------------|--------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1             | Dales Way, near Holme Park Farm     | E 359380<br>N 495560     | Northeast; approximately 804 m from T3        | The viewpoint is representative of views as experienced by nearby residential receptors and recreational users on the PRoW and long-distance recreational route located to the north of the Site.                       |
| 2             | Big Park Farm                       | E 358283<br>N 493336     | Southwest; approximately 586 m from T2        | The viewpoint represents the views as experienced by residential receptors from Big Park Farm, recreational users of the PRoW, and road users of the A684.                                                              |
| 3             | Sandbeds Holiday Cottages Near A685 | E 360097<br>N 498151     | Northeast; approximately 3.49 km from T3      | Representative view of the Proposed Development as experienced by residential receptors (especially Sandbeds Holiday Cottages adjacent to the National Park Boundary), as well as road users travelling along the A685. |
| 4             | Old Field End                       | E 355342<br>N 496388     | Northwest; approximately 3.95 km from T1      | View of the Proposed Development as experienced by residential receptors and users of the PRoW to the northwest of the Site.                                                                                            |
| 5             | The Calf, Dales High Way            | E 366736<br>N 497044     | Northeast; approximately 7.8 km from T6       | View of the Proposed Development as experienced by recreational users on the PRoW, long-distance recreational route, and promoted summit within the                                                                     |

| Viewpoint No.                               | Viewpoint Name                                                           | Viewpoint Grid Reference | Distance and Direction to the Nearest Turbine | Receptor                                                                                                                                                                                                                                                |
|---------------------------------------------|--------------------------------------------------------------------------|--------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             |                                                                          |                          |                                               | Yorkshire Dales National Park, situated to the northeast of the Site.                                                                                                                                                                                   |
| 6<br>(broadly represents the original VP13) | Sedbergh                                                                 | E 365072<br>N 491884     | Southeast; approximately 6.12 km from T4      | The viewpoint represents views within the Yorkshire Dales National Park as experienced by residential receptors at the western edge of Sedbergh and by recreational users on the PRoW and the long-distance recreational route to the east of the Site. |
| 7                                           | A683                                                                     | E 362609<br>N 487963     | Southeast; approximately 6.52 km from T4      | Representative view of the Proposed Development as experienced by road users travelling along the A683 and nearby residential receptors along the River Lune Valley.                                                                                    |
| 8                                           | Bridleway near Burns Beck Moss<br>Nature Reserve and Armistead Wind Farm | E 358787<br>N 487137     | South; approximately 6.37 km from T4          | Representative views of the Proposed Development as experienced by nearby residential receptors and users of the PRoW located to the south of the Site near Armistead Wind Farm.                                                                        |
| 9                                           | Forest Hall Near A6                                                      | E 354749<br>N 501239     | Northwest; approximately 7.73 km from T3      | Representative view of the Proposed Development as experienced by residential receptors within and adjacent to the Lake District National Park Boundary and road users travelling along the A6.                                                         |
| 10                                          | Dales High Way, to the west of Aye Gill Pike                             | E 369318<br>N 489891     | Approximately 10.63 km from T6                | View of the Proposed Development as experienced by residential properties and recreational users on the PRoW and long-distance recreational route                                                                                                       |

| Viewpoint No. | Viewpoint Name                                           | Viewpoint Grid Reference | Distance and Direction to the Nearest Turbine | Receptor                                                                                                                                                                                       |
|---------------|----------------------------------------------------------|--------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                                          |                          |                                               | within the Yorkshire Dales National Park, situated to the southeast of the Site.                                                                                                               |
| 11            | Calf Top                                                 | E 366359<br>N 485672     | Southeast; approximately 10.63 km from T4     | View of the Proposed Development as experienced by recreational users on the PRow and the promoted summit within the Yorkshire Dales National Park, situated to the southeast of the Site.     |
| 12            | High Road, near Barbon                                   | E 362734<br>N 482820     | Southeast; approximately 11.26 km from T4     | The viewpoint represents views experienced by residential receptors on the northern fringe of Barbon within the Yorkshire Dales National Park, located to the southeast of the Site.           |
| 13            | Sizergh Castle                                           | E 349784<br>N 487720     | Southwest; approximately 10.79 km from T2     | Representative views of the Proposed Development as experienced by visitors to Sizergh Castle.                                                                                                 |
| 14            | Staveley                                                 | E 347233<br>N 497969     | Northwest; approximately 12 km from T1        | The viewpoint represents views experienced by residential receptors located on the eastern fringe of Staveley, located to the northwest of the Site within the Lake District National Park.    |
| 15            | PRow near Mabbin Hall                                    | E 350252<br>N 484093     | Southwest; approximately 12.85 km from T2     | View of the Proposed Development as experienced by recreational users on the PRow, long-distance recreational route, and nearby residential properties, situated to the southwest of the Site. |
| 16            | Whitbarrow Scar within the National Nature Reserve (NNR) | E 344165<br>N 488575     | Southwest; approximately 15.46 km from T2     | View of the Proposed Development as experienced by recreational                                                                                                                                |

| Viewpoint No.        | Viewpoint Name                                              | Viewpoint Grid Reference | Distance and Direction to the Nearest Turbine | Receptor                                                                                                                                                                                                         |
|----------------------|-------------------------------------------------------------|--------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |                                                             |                          |                                               | users on the PRow within the NNR, situated to the southwest of the Site.                                                                                                                                         |
| 17                   | Pennine Bridleway Near Great Knoutberry Hill (Widdale Fell) | E 378132<br>N 488338     | Southeast; approximately 19.65 km from T4     | View of the Proposed Development as experienced by recreational users on the long-distance recreational route within the Yorkshire Dales National Park, located to the southeast of the Site.                    |
| 18                   | Arnside                                                     | E 345905<br>N 478992     | Southwest; approximately 19.55 km from T2     | View of the Proposed Development as experienced by residential receptors on the northern edge of Arnside and by recreational users on the long-distance recreational route located to the southwest of the Site. |
| 19<br>(Original VP2) | Killington Reservoir                                        | E 359390<br>N 490900     | South; approximately 2.6 km from T4           | View of the Proposed Development as experienced by residential and recreational receptors at and around Killington Reservoir.                                                                                    |
| 20<br>(Original VP3) | M6                                                          | E 355460<br>N 485400     | Southwest; approximately 8.9 km from T4       | View of the Proposed Development as experienced by road users travelling along the M6 and nearby minor roads, and by recreational users of the PRowS.                                                            |
| 21<br>(Original VP4) | New Hutton                                                  | E 356200<br>N 491400     | Southwest; approximately 3.64 km from T4      | View of the Proposed Development as experienced by residential receptors on the northern edge of New Hutton, recreational users of the PRowS, and road users on the adjacent minor road.                         |

| Viewpoint No.         | Viewpoint Name               | Viewpoint Grid Reference | Distance and Direction to the Nearest Turbine | Receptor                                                                                                                                                                                              |
|-----------------------|------------------------------|--------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22<br>(Original VP5)  | Hodgson's Leap on Scout Scar | E 348700<br>N 491960     | Southwest; approximately 10.58 km from T4     | View of the Proposed Development as experienced by recreational users of the PRow and the promoted lookout near Barrowfield Wood within the Lake District National Park.                              |
| 23<br>(Original VP6)  | Potter Fell                  | E 351340<br>N 498630     | Northwest; approximately 8.53 km from T1      | View of the Proposed Development as experienced by recreational user on the PRow within the Lake District National Park.                                                                              |
| 24<br>(Original VP7)  | Grayrigg                     | E 357660<br>N 497100     | Northwest; approximately 2.67 km from T3      | View of the Proposed Development as experienced by residential receptors, recreational users of the PRow, and the road user travelling along the A685.                                                |
| 25<br>(Original VP8)  | Whinfell                     | E 358540<br>N 500280     | North; approximately 5.48 km from T3          | View of the Proposed Development as experienced by recreational users of the PRow and those visiting the Whinfell Beacon within the Lake District National Park.                                      |
| 26<br>(Original VP10) | Fox's Pulpit                 | E 361930<br>N 493700     | East; approximately 2.12 km from T6           | View of the Proposed Development as experienced by recreational users of the PRow, visitors to Fox's Pulpit, and road users travelling along the minor road within the Yorkshire Dales National Park. |
| 27<br>(Original VP11) | Winder                       | E 365390<br>N 493280     | East; approximately 5.9 km from T6            | View of the Proposed Development as experienced by recreational users of                                                                                                                              |

| Viewpoint No.         | Viewpoint Name           | Viewpoint Grid Reference | Distance and Direction to the Nearest Turbine | Receptor                                                                                                                                                                                        |
|-----------------------|--------------------------|--------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |                          |                          |                                               | the PRow and those visiting Winder within the Yorkshire Dales National Park.                                                                                                                    |
| 28<br>(Original VP14) | Tom Croft Hill Viewpoint | E 369380<br>N 491260     | Southeast; approximately<br>10.23 km from T6  | Representative view of the Proposed Development as experienced by visitors to the promoted viewpoint, nearby residential receptors, and users of the PRow located to the southeast of the Site. |
| 29<br>(Original VP15) | Kendal                   | E 350950<br>N 491970     | Southwest; approximately<br>7.98 km from T2   | Representative view of the Proposed Development as experienced by residential receptors on the westernmost edge of Kendal and recreational users of the nearby PRow.                            |

Viewpoint photography will be undertaken in accordance with good practice, using a full frame digital SLR camera at each viewpoint location. The precise location of each viewpoint will be subject to micro-siting in the field to obtain the clearest views.

### 5.5.6 Preliminary Zone of Theoretical Visibility

A preliminary Zone of Theoretical Visibility (ZTV) has been produced for the purposes of the scoping exercise and is provided in **Figure 5.5** and **Figure 5.6**. The ZTV illustrates the predicted theoretical visibility of the Proposed Development and is based on an Ordnance Survey digital terrain model (OS Terrain 50) and the proposed design height of the turbines. The ZTV provides an indication of the likely blade tip visibility of the Proposed Development across the study area. In addition to these, a comparative ZTV illustrating the existing theoretical visibility of Lambrigg Wind Farm in addition to the predicted visibility of the Proposed Development is provided in **Figure 5.7**.

Whilst ZTVs are a useful tool for the identification of where potential effects may arise, it does not indicate the nature of visibility and is not indicative of an effect in itself. The ZTV does not take into account the potential screening effects of woodland and other localised features such as buildings, trees or local landform which are not captured by the OS Terrain 50 data. Nor does it give an indication of the way in which a development may relate to its broader landscape context and the receding scale and visibility of features with distance. However, consideration of these aspects will be taken into account during the landscape and visual assessment.

## 5.6 Potential Landscape and Visual Effects

The LVIA will consider effects resulting from the decommissioning of the existing wind farm and both the construction and operational phases of the Proposed Development, focussing on the peak activity for the worst-case scenario.

The likely landscape and visual impacts arising from construction are likely to arise from:

- The construction of temporary access roads;
- The construction of temporary construction compounds;
- Plant and vehicles associated with construction;
- Storage and laydown areas; and
- Loss of vegetation.

The likely landscape and visual impacts arising from the operational phase are likely to comprise:

- Long-term direct and indirect effects on landscape character through a change to existing land uses;
- Long-term direct and/or indirect effects on the special qualities and defining features of designated landscapes;
- Long-term changes to visual amenity as a result of visibility of the Proposed Development; and
- Potential effects of localised landscape enhancements as part of the mitigation scheme, such as reinforcement/reinstatement of woodland belts and an increase in overall vegetation cover.

## 5.7 Mitigation

The mitigation measures adopted in the design and layout of the Proposed Development will be established during the preparation of the LVIA and will be developed in consideration of effects on landscape and visual receptors in combination with other environmental considerations. The measures are likely to comprise:

- avoidance of effects;
- reduction in magnitude of effects; and
- compensation for effects (which may include enhancements to offset any adverse effects).

In relation to landscape and visual matters, the primary mitigation is likely to be embedded within the design and layout of the Proposed Development and will comprise consideration given to avoiding and minimising landscape and visual effects during the evolution of the Proposed Development layout. This is typically referred to as 'mitigation by design'.

## 5.8 Proposed Scope of the LVIA

The proposed scope of the LVIA is set out in **Table 5.4**.

Table 5.4 LVIA factors to be Scoped In or Out of the Assessment

| Environmental Receptor, Assessment or Effect                                                                                                                                                                                                   | Scoped In/Out | Rationale                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Landscape receptors directly affected by the Proposed Development within the Site                                                                                                                                                              | Scoped In     | The Proposed Development may result in significant effect on features and/or elements.                                                                                  |
| Landscape Character units whose determining features are directly affected by the Proposed Development.                                                                                                                                        | Scoped In     | The Proposed Development may result in significant effect on features and elements which define the landscape character unit.                                           |
| Landscape Character units indirectly affected by the Proposed Development, and in proximity to the Proposed Development.                                                                                                                       | Scoped In     | The Proposed Development may result indirectly in significant effect on the landscape character unit, e.g. in consideration of tranquillity/night-time characteristics. |
| Landscape Character units indirectly affected by the Proposed Development, and not in proximity to the Proposed Development.                                                                                                                   | Scoped Out    | There would be no change to the landscape fabric or effect on features which define the landscape character unit, effects are indirect/visual only.                     |
| Landscape Designations from which there would be a high degree of visibility of the Proposed Development and/or changes to key landscape features within the designation.                                                                      | Scoped In     | The Proposed Development may result in significant effects on the special qualities of the landscape which contribute to its designation.                               |
| Assessment of effects on the views and visual amenity of people within settlements within the Study Area from which a high degree of visibility predicted.                                                                                     | Scoped In     | The Proposed Development may result in significant effects on the views and visual amenity of people within settlements.                                                |
| Assessment of effects on the views and visual amenity experienced from transport routes (comprising 'the M6, A' class roads and railways) within the Study Area from which a high degree of visibility is predicted.                           | Scoped In     | The Proposed Development may result in significant effects on the views and visual amenity of users of transport routes within the Study Area.                          |
| Assessment of effects on the views and visual amenity experienced from popular recreational destinations within the study area from which a high degree of visibility predicted (including users of PROWs within 5 km of the nearest turbine). | Scoped In     | The Proposed Development may result in significant effects on the views and visual amenity of visitors to popular recreational locations within the Study Area.         |
| Assessment of effects on the views and visual amenity experienced from settlements, transport routes and                                                                                                                                       | Scoped Out    | Due to distance or limited extent of visibility the Proposed Development                                                                                                |

| Environmental Receptor, Assessment or Effect                                                                                      | Scoped In/Out | Rationale                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------|
| recreational destinations within the study area from which views are predicted to be limited or experienced over a long distance. |               | Would be unlikely to result in significant adverse effects. |

## 5.9 Consultation and Scoping Questions

Consultation on the scope and approach to the LVIA will be conducted with the following consultees:

- Westmorland and Furness Council;
- Lake District National Park Authority;
- Yorkshire Dales National Park Authority; and
- Natural England.

Key questions for consultees are:

- Q5.1 – Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, or to assess cumulative effects?
- Q5.2 – Are there any comments on the proposed Study Areas?
- Q5.3 – Do you agree with the proposed approach to the baseline to the assessment of landscape and visual effects, i.e. that the baseline comprises the existing turbines in situ until the construction of the Proposed Development commences as opposed to a 'greenfield' site/one without the existing turbines?
- Q5.4 – Do you agree with proposed approach to the assessment of landscape character areas and that the focus of the assessment should be the host character area and character areas that are in proximity to the Proposed Development?
- Q5.5 – In regard to the assessment of effects on the special landscape qualities of the national parks, do the national park authorities agree with the approach proposed in **Section 5.4.3** and the adoption of NatureScot's guidance on the assessment of Special Landscape Qualities?
- Q5.6 – Are there any comments on the proposed list of assessment viewpoint locations?
- Q5.7 – Which viewpoints do you consider would be helpful to assess effects associated with aviation lighting?

- Q5.8 – Has the consultee identified any further landscape or visual receptors that could be considered within the assessment (i.e., where it is expected that likely significant effects may occur)?
- Q5.9 – Are there any other relevant consultees who should be consulted with respect to the LVIA?

# 6. Ecology

## 6.1 Introduction

This chapter outlines the scope of the ecology assessment for the Proposed Development. It details the baseline condition, potential effects from construction, operation (including maintenance), and decommissioning activities, assessment methodology, and potential mitigation measures.

The chapter also outlines the proposed approach to the technical scope in the EIA and determines the specific elements that are scoped in and out of the assessment, aligning with the requirements of the EIA regulations.

The potential effects of the Proposed Development have been identified through a technical review of the current design, construction, operational, and decommissioning aspects of the Proposed Development and how these may interact with sensitive ecological receptors. A separate chapter (**Chapter 7**) has been prepared to discuss the effects of the Proposed Development on ornithology.

## 6.2 Topic-Specific Legislation, Policy and Guidance

The scope of the ecology assessment has been developed in line with the following key legislation, policy and associated guidance:

### 6.2.1 Legislation

- The Conservation of Habitats and Species Regulations 2017 (as amended) (Habitat Regulations)<sup>3</sup>;
- The Environment Act 2021<sup>4</sup>;
- The Wildlife and Countryside Act 1981 (as amended)<sup>5</sup>;
- UK Biodiversity Framework (2024)<sup>6</sup>.
- The Hedgerow Regulations 1997<sup>7</sup>;

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<sup>3</sup> HM Government (2017) The Conservation of Habitats and Species

Regulations 2017 (as amended). Available at: The Conservation of Habitats and Species Regulations 2017

<sup>4</sup> Environment Act 2021. Available at: Environment Act 2021

<sup>5</sup> The Wildlife and Countryside Act 1981 (as amended). Available from: Wildlife and Countryside Act 1981

<sup>6</sup> JNCC on behalf of the Four Countries' Biodiversity Group. 2024. UK Biodiversity Framework. JNCC, Peterborough.

<sup>7</sup> HM Government (1997) Hedgerow Regulations 1997. Available online: The Hedgerows Regulations 1997

- The Protection of Badgers Act 1992<sup>8</sup>; and
- The Natural Environment and Rural Communities (NERC) Act 2006<sup>9</sup>.

## 6.2.2 National and Local Planning Policies

- Overarching National Policy Statement for Energy (2025) (EN-1) with reference to Section 4.6 for assessment principles on Environmental and Biodiversity Net Gain and Section 5.4 for impacts<sup>10</sup>;
- National Policy Statement for Renewable Energy Infrastructure (2025) (EN-3) with reference to Paragraph 2.3.6 for National designations, Paragraphs 2.12.52 – 2.12.80 for impacts and paragraphs 2.12.114 – 2.12.120 for mitigation<sup>11</sup>;
- National Policy Statement for Electricity Networks Infrastructure (2025) (EN-5) with reference to paragraph 2.5.1 for environmental and biodiversity net gain, paragraphs 2.9.3 – 2.9.6 regarding impacts; and paragraphs 2.10.2 – 2.10.4 regarding mitigation<sup>12</sup>;
- National Planning and Policy Framework (NPPF) (2024) with reference to Chapter 15 – Conserving and enhancing the natural environment<sup>13</sup>;
- The Cumbria Biodiversity Action Plan (BAP)<sup>14</sup>; and
- Cumbria Local Nature Recovery Strategy (LNRS)<sup>15</sup>.

## 6.2.3 Guidance

- CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine<sup>16</sup>;

Further guidance is referenced to in the specific section for each subtopic.

8 Protection of Badgers Act 1992. Available at: [ukpga\\_19920051\\_en.pdf](https://www.legislation.gov.uk/ukpga/1992/051/en.pdf)

9 Natural Environment and Rural Communities Act 2006. Available from: <https://www.legislation.gov.uk/ukpga/2006/16/contents>

10 Department for Energy Security and Net Zero (December 2025) Overarching National Policy Statement for Energy (EN-1) [Online] Available at: Overarching National Policy Statement for Energy (EN-1) – December 2025

11 Department for Energy Security and Net Zero (December 2025) Overarching National Policy Statement for Renewable Energy Infrastructure (EN-3) [Online] Available at: National Policy Statement for Renewable Energy Infrastructure (EN-3)

12 Department for Energy Security and Net Zero (December 2025) Overarching National Policy Statement for Electricity Networks Infrastructure (EN-5) [Online] Available at: National Policy Statement for Electricity Networks Infrastructure (EN-5) – December 2025

13 Ministry of Housing, Communities and Local Government (December 2024) National Planning and Policy Framework [Online] Available at: National Planning Policy Framework

14 Cumbria Biodiversity Action Plan (2001). Available online: <https://www.barrowbc.gov.uk/sites/default/files/attachment/5897.pdf>

15 Cumbria Local Nature Recovery Strategy (2025). Available online: <https://westmorlandandfurness.moderngov.co.uk/documents/s28249/Appendix+1+for+CAB+2101+-+Cumbria+Local+Nature+Recovery+Strategy.pdf>

16 CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester.

## 6.3 Preliminary Baseline Conditions

### 6.3.1 Proposed Study Area and Zone of Influence (Zol)

The Study Area has been defined proportionately to the potential ecological impact pathways associated with the Proposed Development and is considered sufficient to identify ecological receptors that may be affected. The Study Area comprises:

- the application site (red line boundary (RLB));
- 250 m buffer from the RLB for great-crested newts (GCN);
- desk study extending to 2 km from the RLB for protected and notable species records due to the likely range; and,
- 5 km for statutory designated nature conservation sites.

These search areas have been selected to ensure that ecological features with the potential to be affected by the Proposed Development are identified and considered during the assessment.

The Zone of Influence ('Zol') is specific to each development. For the Proposed Development, the Zol is based upon the habitats and species likely present within the Site, and likely to be subject to effects from the Proposed Development. The impact pathways of the Proposed Development, considered when informing the Zol are as follows:

- Direct and indirect habitat loss, change and fragmentation (during construction, operation and decommissioning);
- Noise, visual disturbance and potential harm to individual species (during construction and decommissioning); and,
- Surface water pollution, erosion, sedimentation and increase in surface water run-off, and changes in flow regime (during construction, operation and decommissioning).

Further consideration will be given to the Zol once more survey information is available.

### 6.3.2 Data Sources

The preliminary baseline conditions presented here are based on desk studies (including a background data search) and previous field surveys undertaken in support of a Preliminary Ecological Appraisal (PEA) Report in 2022<sup>17</sup> for a smaller (approx. 72 ha) Site footprint. Further ecological field surveys are currently being undertaken in

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<sup>17</sup> Lambrigg Wind Farm PEA (2022). RSK Biocensus. Available at: Planning application: SL/2022/1179 | Westmorland & Furness Council

2026 due to the proposed expansion of the Site and the time that has elapsed since the 2022 surveys.

MAGIC website has been consulted to obtain information about internationally important sites within 5 km.

Cumbria Biodiversity Data Centre (CBDC) were consulted for local records of protected species within 2 km of the Site boundary.

### 6.3.3 Designated Sites

A desk study search within the 5 km Study Area was undertaken for statutory designated sites of terrestrial ecological interest. This initial search identified two Sites of Special Scientific Interest (SSSI) and one Special Area of Conservation (SAC) within the Study Area. Of these, one SSSI and one SAC are within 2 km of the Site. One Local Nature Reserve (LNR) is also situated within the Study Area. These Sites and their respective qualifying features are listed in **Table 6.1** and displayed in **Figure 6.1**. There are no SACs where bats are a qualifying feature within 30 km of the Site boundary.

**Table 6.1 Designated Sites**

| Designated Site                 | Distance from Proposed Site | Site Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| River Kent SAC                  | 1.6 km north-west           | <p>Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation, for which the area is considered to support a significant presence.</p> <p>White-clawed crayfish (<i>Austropotamobius pallipes</i>), for which this is considered to be one of the best areas in the United Kingdom.</p> <p>Bullhead (<i>Cottus gobio</i>), for which the area is considered to support a significant presence.</p> <p>Freshwater pearl mussel (<i>Margaritifera margaritifera</i>), for which the area is considered to support a significant presence.</p> |
| River Kent and Tributaries SSSI | 1.6 km north-west           | <p>The Kent is a river of upland character in southern Cumbria. Densities of white-clawed crayfish are very high throughout much of the Kent system (particularly in the tributaries), perhaps higher than anywhere else in England. Freshwater pearl mussel and bullhead are also present.</p>                                                                                                                                                                                                                                                                                                              |
| Killington Bridge LNR           | 3.3 km south-east           | <p>Atlantic salmon (<i>Salmo salar</i>) occur in the river and there is a strong likelihood that a number of mammals such as otter (<i>Lutra lutra</i>) and badger (<i>Meles meles</i>) use the wood.</p>                                                                                                                                                                                                                                                                                                                                                                                                    |

| Designated Site      | Distance from Proposed Site | Site Description                                                                                                                                                                                                                                                                                 |
|----------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Burns Beck Moss SSSI | 4.8 km south                | A rare, ecologically significant wetland nature reserve near Sedbergh, Cumbria, featuring a unique combination of nutrient-poor raised mires and nutrient-rich valley mires. It acts as a refuge for specialized wildlife, including 16 species of <i>Sphagnum</i> moss and varied bird species. |

As seen in **Figure 6.1**, Langdale, Bowderdale and Carlin Gill SSSI<sup>18</sup> is located immediately outside of the 5km study area. As this SSSI is of geological interest, and no function pathway for the Proposed Development to affect it, this SSSI is not considered further.

### 6.3.4 Ancient Woodland

The desk study found that there was no ancient woodland within 2km of the RLB.

### 6.3.5 Field Survey Findings to Date

A Preliminary Ecological Appraisal (PEA) was undertaken by RSK Biocensus on the 3<sup>rd</sup> and 4<sup>th</sup> of November 2022 on the smaller (72 ha), original wind farm site footprint. Further habitat surveys and protected species of the RLB are being undertaken by ERM throughout 2026. **Figure 6.2** shows ERM's current protected species surveys results as well as the earlier RSK survey boundary (blue) and the new RLB.

#### 6.3.5.1 Habitats

At the time of this report, ERM has not completed habitat surveys for the new site RLB, however habitats are believed to be similar to those highlighted in the previous 2022 RSK PEA. This recorded areas of blanket bog (a priority habitat in the Cumbria Biodiversity Action Plan) throughout the original Site. However, due to a lack of detailed botanical assessment or information regarding the presence of peat or the hydrology at the time of the assessment, it was difficult to be certain of the classification of some of these areas. Regardless, it is assumed that all areas with extensive sphagnum cover will be priority habitats. Fen, marsh and swamp, which are also priority habitats, are also interspersed across the Site.

The majority of the original wind farm Site boundary comprised a mix of varying forms of acid grassland, most of which is unimproved, but features numerous scattered patches of soft-rush (*Juncus effusus*). The western third of the original Site, which is mostly over 300 m in elevation, is dominated by a mix of common bent (*Agrostis*

<sup>18</sup><https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S2000195&SiteName=Bowderdale%20and%20Carlin%20Gill%20&countyCode=&responsiblePerson=&SeaArea=&IFCAAarea=>

*capillaris*) and mat-grass (*Nardus stricta*), with other species including purple moor-grass (*Molinia caerulea*), heath bedstraw (*Galium saxatile*), heath rush (*Juncus squarrosus*), brown bent (*Agrostis vinealis*), sweet vernal-grass (*Anthoxanthum odoratum*) and sheep's-fescue (*Festuca ovina*) with mosses including *Pseudoscleropodium purum* and *Rhytidiadelphus squarrosus*. Less frequently, a small range of mushrooms including waxcaps were present, as well as bilberry (*Vaccinium myrtillus*).

Elsewhere, other acid grassland covers the remainder of the original Site.

### 6.3.5.2 Fish

A walkover survey along all watercourses within the RLB has now been completed on the 21<sup>st</sup> and 22<sup>nd</sup> of July in accordance with the latest guidelines<sup>19,20</sup>, to record habitat suitability for priority fish species such as salmonids (Atlantic salmon (*Salmo salar*), brown / sea trout (*Salmo trutta*)) and bullhead<sup>21,22</sup>.

Sparishaw Beck and some of its tributaries were found to contain suitable habitat for salmonids, eel (*Anguilla anguilla*) and lamprey species and bullhead, though no spawning habitat was recorded. In addition, during the white-clawed crayfish eDNA Surveys bullhead was recorded within Sparishaw Beck.

Should watercourse crossings be proposed along Sparishaw Beck or its tributaries, further surveys for fish will be required to inform a suitable mitigation strategy.

### 6.3.5.3 White-clawed Crayfish

ERM ecologists undertaking protected species surveys on 15<sup>th</sup> April 2026 recorded the remains of a white-clawed crayfish in the Sparishaw Beck.

White-clawed crayfish eDNA surveys have been undertaken within watercourses within the RLB in accordance with the latest guidelines<sup>23</sup>. The eDNA surveys undertaken by ERM in July 2026 confirmed that Sparishaw Beck supports white-clawed crayfish.

### 6.3.5.4 Freshwater Pearl Mussel

All watercourses within the RLB were subjected to a Fish Habitat Survey, as part of this survey habitats were also assessed for suitability for freshwater pearl mussel

19 Hendry and Cragg Hine, D. (1997) restoration of Riverine Salmon Habitats – A Guidance manual – Fisheries Technical Manual 4. Environment Agency, Bristol.

20 Environment Agency (2003) River Habitat Survey in Britain and Ireland. Field Survey Guidance Manual. Environment Agency Bristol

21 <https://sac.jncc.gov.uk/species/S1106/>

22 <https://sac.jncc.gov.uk/species/S1163/>

23 Marshall, i. & Nightingale, J. (2021) Crayfish Conservation Manual. Rostra Publications, Bristol.

(FWPM). The Fish Habitat Surveys found the habitats within the RLB to be unsuitable for FWPM.

The Site has hydrological connection to the Kent SAC, through Lambrigg Beck and other watercourses in the northeast of the Site; however, these watercourses will be avoided by the Proposed Development. In addition, as per the River Kent SAC Evidence Pack<sup>24</sup>, the known population of FWPM within the River Kent SAC lies within a watercourse approximately 17.5 km from the RLB, and lies upstream of the River Kent, and thus there is no hydrological connection between the Proposed Development and the known population of FWPM.

For the reasons denoted above, surveys for FWPM will not be undertaken; however, should the design change, and the watercourses in the northeast of the RLB will be affected, then these watercourses will be subject to habitat assessment for FWPM, and should suitable habitat be present, further surveys for FWPM will be required.

#### 6.3.5.5 Great Crested Newt

Environmental DNA (eDNA) surveys undertaken by ERM in April 2026 identified the presence of GCN in eight ponds within 250 m of the RLB.

#### 6.3.5.6 Reptiles

Based on ERM's 2026 protected species walkover surveys, suitable habitat for reptiles is present within the new Site RLB. However, due to current land management practices, including sheep grazing, it is considered likely to support reptiles at relatively low abundance.

#### 6.3.5.7 Bats

ERM surveyors undertook a ground level assessment of the onsite trees and the single building within the RLB. The building and majority of trees on site were considered to offer negligible suitability for roosting bats, due to a lack of potential roosting features, however an area of mature trees was found in the north of the Site with potential roosting features.

Linear features such as the southern perimeter tree line and watercourses crossing the original Site offer potential commuting and foraging opportunities for bats. The wet ground covering much of the original Site is likely to support significant numbers of insects during the warmer months which may in turn draw bats in from the wider area as a foraging resource.

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<sup>24</sup> Natural England (2024) Natural England Technical Information Note TIN198 River Kent Special Area of Conservation – Evidence Pack [Online]  
Available at: River Kent Special Area of Conservation - Evidence Pack - TIN198 (Accessed September 2026)

Bat activity surveys undertaken by ERM are ongoing and the need for any further surveys will be considered upon completion.

#### 6.3.5.8 Water Vole

No evidence of water vole (*Arvicola amphibius*) was recorded during the surveys and the habitat present on the original Site is considered to be of relatively low suitability. It is therefore considered unlikely that water voles are present on the original Site.

Whilst some suitable habitat is present within the repowering and extension RLB, no evidence of water vole was recorded during surveys undertaken by ERM in Spring 2026. However, as sign of water vole can be missed in Spring, a second visit is proposed in Autumn 2026.

#### 6.3.5.9 Otter

Evidence of otter was recorded during surveys undertaken by ERM in Spring 2026, including faeces (spraints) and feeding remains in the lower reaches of the Sparishaw Beck catchment, close to where the watercourse leaves the Site. No resting places or holts were identified within the RLB. The Site is therefore considered to be used occasionally by commuting and foraging otter.

#### 6.3.5.10 Badger

No evidence of badger (*Meles meles*) was recorded during the surveys and the habitat present on the original Site is considered to be of relatively low suitability.

Whilst some suitable foraging and commuting habitat is present within the repowering and extension RLB, no evidence of badger, including setts, latrines, tracks or other field signs, was recorded during surveys undertaken by ERM in Spring 2026. Given the absence of evidence and the generally limited suitability of the habitat present, the risk of badger presence within the Site is considered to be low.

#### 6.3.5.11 Further Protected and Notable Species

Desk Study records received from CBDC identified protected and notable species within 2 km of the Site within the last 10 years which are shown on **Figure 6.3a**, and **Figure 6.b**. The only notable records included within the RLB are one record of polecat (*Mustela putorius*), and one record of bogbean (*Menyanthes trifoliata*). All other species have been recorded by the previous and current surveys.

## 6.4 Planned Surveys

Further surveys will be undertaken within the RLB to inform the assessment. These will be determined by the findings of additional Extended UKHab surveys and the design (and therefore potential effects) of the Proposed Development. Further surveys will be conducted in accordance with current professional standards.

### 6.4.1 Habitats

#### 6.4.1.1 UKHab Survey

In accordance with the latest version of the UKHab survey methodology (UKHab Ltd (2023) UK Habitat Classification Version 2.0<sup>25</sup>), an updated UKHab survey will be completed across the Site. This survey will map habitats according to alpha numeric UK Hab classification codes and involve the completion of a habitat condition assessment (HCA) based on latest guidance. The survey will record vascular plants and identify the presence or absence of invasive botanical species. Target Notes (TN) will detail notable features and evidence of protected species.

The UKHab Survey will be completed between April and September 2026.

#### 6.4.1.2 National Vegetation Classification (NVC) Survey

In line with current guidelines (Rodwell (2006) National Vegetation Classification: User's Handbook<sup>26</sup>), an NVC Survey of specific areas of the Site may be undertaken following the results of the UKHab survey. The NVC Survey will focus on areas of habitat identified as both high value during the UKHab survey and irreplaceable within the Statutory Biodiversity Metric. The survey will be conducted within the RLB.

The NVC Survey, should it be required, will be completed between April and September.

### 6.4.2 Bats

Static bat detectors will be deployed at each turbine location (one detector per turbine) and monitored to determine levels of bat activity on the Site throughout the year. Surveys will be carried out between April and October 2026 with static detectors being deployed for a minimum of ten consecutive nights per survey season.

- Season 1 (Spring): April – May;
- Season 2 (Summer); June – August; and

<sup>25</sup> UKHab Ltd (2023) UK Habitat Classification Version 2.0 [Online] Available at: [ukhab – UK Habitat Classification](#)

<sup>26</sup> Rodwell (2006) National Vegetation Classification: User's Handbook. [Online] Available at: [National Vegetation Classification: Users' handbook](#)

- Season 3 (Autumn): September – October.

Trees and structures present on Site have been assessed from ground level for their suitability to support roosting bats.

Bat surveys have followed guidelines:

- Bat Conservation Trust (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines. (4th edition)<sup>27</sup>;
- Reason, P.F. and Wray, S. (2025) UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats<sup>28</sup>; and,
- NatureScot et al (2021) Bats and onshore wind turbines – survey, assessment and mitigation<sup>29</sup>.

### 6.4.3 Great Crested Newt

eDNA and habitat suitability assessment (HSI) (Oldham *et al* (2000) Evaluating the suitability of habitat for the GCN (*Triturus cristatus*)<sup>30</sup>) surveys for GCN were undertaken between the 15th April and 30th June 2026. Subject to the final design, the proximity of works to ponds supporting GCN, and the licensing solution selected, population surveys may be required between mid-March and mid-June 2027.

### 6.4.4 Freshwater Ecology Surveys

Sparishaw Beck is hydrologically connected to Peasey Brook, indicating potentially suitable habitat within the Site for bullhead, and other fish species.

Current proposals indicate that at least three new watercourse crossings will be required for access tracks, and to assess the impacts of these crossings upon freshwater ecology, the following survey will be undertaken:

#### 6.4.4.1 White-clawed Crayfish

The finding reported in **Section 6.3.5.3** means that further population surveys are scheduled in accordance with the latest guidelines<sup>31</sup> to determine the extent and distribution of the population within the Sparishaw Beck.

27 Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

28 Reason, P.F. and Wray (2025) UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Version 1.2 Chartered Institute of Ecology and Environmental Management, Ampfield.

29 NatureScot et al (2021) Bats and onshore wind turbines – survey, assessment and mitigation. [Online] Available at: Bats and onshore wind turbines - survey, assessment and mitigation | NatureScot

30 Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000) Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). Herpetological Journal 10(4), 143 – 155.

31 Peay, (2003) Monitoring the White-clawed crayfish – Conserving Natura 2000 Rivers Monitoring Series No.1. English Nature, Peterborough.

## 6.5 Technical Scope and Approach to EIA

The assessment within the ES will consider the likely effects of construction, operational and decommissioning activities of the Proposed Development on habitats and species of conservation importance. The assessment will be informed by a combination of desk study findings, field surveys and consultation, with relevant statutory and non-statutory organisations.

The residual effects will be presented to make it clear to the decision maker and stakeholders the likely significance of the effects that will result from the Proposed Development on nature conservation interests with all mitigation measures in place. Mitigation measures will be included to avoid, minimise, or reduce adverse effects. The significance of effects will be determined using standard impact assessment methods and criteria (see below):

- the magnitude of both positive and negative effects, as determined by intensity, frequency and by the extent of the effect in space and time;
- the vulnerability of the habitat or species to the changes likely to arise from the Project;
- the ability of the habitat, species, or ecosystem to recover, considering both fragility and resilience;
- the viability of component ecological elements and the integrity of ecosystem function, processes and favourable condition;
- value within a defined geographic frame of reference (e.g. UK, national, regional, local);
- the biodiversity value of affected species, populations, communities, habitats, and ecosystems, considering aspects such as rarity, distinct subpopulations of a species, habitat diversity and connectivity, species-rich assemblages and species distribution and extent;
- designated sites and where a site has multiple designations, the effects on the features of each designation; and
- protected species status.

It will take account of the Guidelines for EcIA in the UK and Ireland produced by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2024) and is either 'significant' at a particular geographical level (e.g. internationally, nationally, locally), or 'not significant'. A 'significant effect' is an effect "...that either supports or undermines biodiversity conservation objectives for important ecological features, or for biodiversity in general."

Legal protection is considered separately from value. The protection of a particular ecological feature through international or national legislation does not mean that the feature is of international or national importance. For example, badgers and their setts are protected under national legislation, the Protection of Badgers Act (1992), but this does not mean that the presence of a badger sett is of national importance.

These and other guidelines, legislation and planning policy are mentioned throughout where relevant.

### 6.5.1 Characterising Potential Effects

Examples of the potential effects considered, which may be beneficial or adverse, are listed below:

- Loss of habitat or species of flora and fauna from permanent or temporary land take.
- Disturbance to, or displacement of a species from the Project site because of permanent or temporary land take.
- Collision risk and barotrauma from proposed turbines on Project site;
- Impacts to adjacent habitats (and the species that use them) that are not directly required for construction or operation (e.g. through movements of vehicles and site personnel, lighting, dust, noise and vibration, discharges to water, alteration to drainage regimes).
- Fragmentation of habitat or severance of ecological corridors (such as watercourses, hedgerows, flyways).
- Creation, of new, restoration, and enhancement of habitat.

## 6.6 Potential Significant Effects and Mitigation

The following effects on ecological receptors have the potential to result from the Proposed Development and shall be considered in undertaking the ecological assessment.

### 6.6.1 Construction

- Direct and indirect impacts on habitats, including blanket bog (a priority habitat in the Cumbria Biodiversity Action Plan);
- Pollution of habitats due to accidental spillage or leakage during construction;
- Effects on habitats from construction dust and air pollutants from construction traffic; and,

- Potential for killing, injuring, disturbing and / or displacing protected and priority species, and loss of supporting habitats during construction e.g. due to entrapment in trenches, collision with site vehicles or destruction of important areas of shelter (e.g. bat roosts, badger setts) whilst in use by protected species.

### 6.6.2 Operation

- Turbine-related bat mortality death or injury to bats by collision with the turbine blades or barotrauma during the operational phase;
- Damage and disturbance caused by maintenance activities, leading to displacement of protected species; and,
- Disturbance to protected species from operational lighting and noise.

### 6.6.3 Decommissioning

Potential impacts of decommissioning works on ecology features of the Proposed Development are likely to be similar to those during construction. Prior to decommissioning, it is anticipated that the Site would be assessed by an ecologist to identify the requirements for surveys to update the baseline condition and / or any mitigation or best practice measures, in accordance with prevailing guidance and legislation at the time of works.

### 6.6.4 Embedded Mitigation

Standard construction and operational good practice will be adopted to safeguard habitats and species. Good practice mitigation measures will be described in the ES and the means for securing them will be set out in relevant documents (e.g. Outline CEMP). Safeguards will include:

- Pre-construction surveys for protected species such as badgers and water voles;
- An Ecological Clerk of Works (ECoW) present on Site to ensure compliance with planning conditions and legislation during construction;
- Minimum 15 m buffer from woodlands;
- Minimum 20 m buffer from watercourses including ditches;
- Minimum 10 m buffer from hedgerows; and,
- Minimum 20 m buffer from ponds;

The Proposed Development will follow the mitigation hierarchy as per CIEEM guidelines and relevant planning policy. Areas of important habitat are present on the

Site and the design of the Proposed Development will seek to avoid these areas where possible.

Good practice measures aside, site-specific mitigation measures will also be identified following the completion of the surveys and the assessment and will include, but not be limited to:

- Environmental Good Practice on Site;
- Pollution Prevention Guidelines;
- Clearly defined working areas that exclude works around sensitive features (e.g. bat roosts); and,
- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

### 6.6.5 Project Mitigation

At present, avoidance of the Lambrigg Beck will be undertaken and no watercourse crossings are proposed for this watercourse.

If required, further project-specific mitigation will be detailed within the EclA following completion of the assessment.

### 6.6.6 Biodiversity Net Gain

Schedule 7A of the Town and Country Planning Act 1990 (inserted by Schedule 14 the Environment Act 2021) requires developments to deliver at least a 10% increase in biodiversity value relative to the pre-development biodiversity value of the on-site habitat (i.e. all habitats within the boundary of the development), irrespective of whether the habitats are impacted by the development.

Habitat enhancements must be maintained for at least 30 years from the completion of the habitat creation or enhancement works. An Outline Habitat Management and Monitoring Plan (HMMP) is required to support the delivery of the final BNG commitments and set out the responsibilities for creating, enhancing, monitoring and reporting for the 30-year period.

This will include any continuation of existing mitigation set out within the current operation wind farm HMP.

ERM will calculate baseline biodiversity units for the agreed RLB using the Defra Statutory Biodiversity Metric<sup>32</sup> and will support the development of a landscape plan through iterative collaboration with the landscape architect to optimise on site habitat

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<sup>32</sup> <https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides>

creation and enhancement. The Cumbria Local Nature Recovery Strategy<sup>33</sup> will be reviewed to inform the BNG assessment and suitable on-site habitat creation and enhancements.

Using GIS/CAD design information and ERM field collected habitat and condition data, the final landscape plan will be digitised and the Statutory Biodiversity Metric produced following design freeze, demonstrating how a 10% Net Gain is predicted to be achieved for the Proposed Development.

A draft Gain Plan and draft outline HMMP will be produced alongside the Statutory Biodiversity Metric to support the planning application.

### 6.6.7 Habitat Regulations Assessment

European sites form part of a network of protected sites across the UK known as the national site network (NSN)<sup>34</sup>. The Habitat Regulations Assessment (HRA) is the process that determines whether there are any 'likely significant effects' of a project either alone, or in combination with other projects and plans on a European site (screening stage). If a likely significant effect cannot be ruled out, then an Appropriate Assessment must be undertaken to determine whether the integrity of the European site will be adversely affected by the project.

As per **Table 6.1**, the desk study identified one SAC within 5 km of the Proposed Development:

- River Kent SAC – 1.6 km north-west and is designated for aquatic species including white-clawed crayfish, freshwater pearl mussel and bullhead. The site is functionally connected to the Site via tributaries of the River Kent which flow through and onto the Site. As such, impacts on the SAC from the Proposed Development cannot be ruled out unless it is confirmed that any watercourse crossings will avoid tributaries linked to the SAC.

It is understood that the Proposed Development will avoid Lambrigg Beck, and other watercourses in the northeast of the Site; therefore, likely significant effects on the River Kent SAC can be scoped out due to a lack of impact pathways.

However, should the design change and proposed watercourse crossings traverse the Lambrigg Beck, or its tributaries, a HRA will be required as there would be a potential impact pathway to the River Kent SAC.

<sup>33</sup> <https://cumbrialnrs.org.uk/homepage-0>

<sup>34</sup> UK Government (<https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017#creating-a-national-site-network>) UK Government (2021) Changes to the Habitats Regulations 2017 (Online) Available at: <https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017#creating-a-national-site-network> [March 2026]

## 6.7 Proposed Scope of the EIA

**Table 6.2** summarises the biodiversity features and whether they have been scoped in or out at this stage taking account of the findings to date. Further surveys will be undertaken for features that are scoped in and the significance of any effect will be assessed.

**Table 6.2 Ecological Factors to be Scoped In or Out of the Assessment**

| Potential Effect / Topic | Scoped In / Out | Rationale                                                                                                                                                                                                                   |
|--------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Designated sites         | Scoped Out      | No effects are proposed to on designated site and therefore these are currently scoped out of the assessment.                                                                                                               |
| Habitats                 | Scoped In       | Potential effects include direct loss of habitat, disturbance, and indirect impacts such as pollution.                                                                                                                      |
| Amphibians including GCN | Scoped In       | Due to the expansion of the Site and the time that has elapsed since previous ecology surveys, there is potential for GCN to be affected by the Proposed Development and at this stage, GCN are scoped into the assessment. |
| Reptiles                 | Scoped In       | Suitable habitat is present on the Site and reptiles are therefore scoped in further to the assessment.                                                                                                                     |
| Bats                     | Scoped In       | Due to the expansion of the Site and the time that has elapsed since previous ecology surveys, there is potential for bats to be affected by the Proposed Development.                                                      |
| Otter                    | Scoped In       | Proposed watercourse crossings have potential to impact otter which are present on the Site                                                                                                                                 |
| Water Vole               | Scoped In       | Proposed watercourse crossings have potential to impact water vole which may be present on the Site                                                                                                                         |
| Badger                   | Scoped Out      | Badger have currently recorded to be absent form the Site and they are therefore scope out further of the assessment                                                                                                        |
| White-clawed Crayfish    | Scoped In       | Proposed watercourse crossings have potential to impact white-                                                                                                                                                              |

| Potential Effect / Topic | Scoped In / Out | Rationale                                                                                                                                                                                                                                                                   |
|--------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                 | clawed crayfish which are present on the Site                                                                                                                                                                                                                               |
| Freshwater Pearl Mussel  | Scoped Out      | No watercourse crossing are proposed to be undertaken on the Lambrigg beck which is functionally linked to the River Kent. No suitable habitat within the watercourses on site was recorded for breeding FWPM and they are therefore scope out further form the assessment. |
| Fish                     | Scoped In       | Proposed watercourse crossings have potential to impact fish which may be present on the Site.                                                                                                                                                                              |

## 6.8 Consultation and Scoping Questions

Questions for consultees are as follows:

- Q6.1 – Do you agree that the data sources identified are sufficient to inform the ecological baseline for the ES?
- Q6.2 – Have all ecological receptors and potential likely significant effects that could result from the Proposed Development been identified?
- Q6.3 – Do you agree with the proposed assessment methodology (scoped in or out) for each of the potential effects in Table 6.2?
- Q6.4 – Do you agree that mitigation measures described provide a suitable means for managing and mitigating the potential likely significant effects of the Proposed Development in relation to ecology and nature conservation?
- Q6.5 – Are you aware of any other management or development activities that could affect the proposed assessment approach, particularly in relation to the establishment of the ecological baseline?
- Q6.6 – Do you agree with the proposed approach to BNG as set out in **Section 6.6.6**
- Q6.7 – Do you agree that HRA screening is not required at this stage? Although the Site is hydrologically connected to the Kent SAC via the Lambrigg Beck and its tributaries to the northeast of the Site, these watercourses will be avoided by the Proposed Development, and therefore no impact pathway is anticipated.

# 7. Ornithology

## 7.1 Introduction

This chapter outlines the scope of the ornithology assessment for the Proposed Development. It details the baseline condition, potential effects from construction, operation (including maintenance), and decommissioning activities, assessment methodology, and potential mitigation measures.

It will also outline the proposed approach to the technical scope of this chapter for the EIA and determine the specific elements that are scoped in and out of each assessment, aligning with the requirements of the EIA regulations.

The potential effects of the Proposed Development have been identified through a technical review of the current design, construction, operational, and decommissioning aspects of the Proposed Development and how these may interact with sensitive ornithological receptors.

## 7.2 Topic-specific Legislation, Policy and Guidance

The scope of the ornithology section of the EIA has been developed in line with the following key legislation, policy and associated guidance:

### 7.2.1 Legislation

- The Conservation of Habitats and Species Regulations 2017 (as amended) (Habitat Regulations)<sup>35</sup>;
- The Environment Act 2021<sup>36</sup>;
- The Wildlife and Countryside Act 1981 (as amended)<sup>37</sup>;
- UK Biodiversity Framework (2024)<sup>38</sup>;
- The Natural Environment and Rural Communities (NERC) Act 2006<sup>39</sup>

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<sup>35</sup> HM Government (2017) The Conservation of Habitats and Species

Regulations 2017 (as amended). Available at: The Conservation of Habitats and Species Regulations 2017

<sup>36</sup> Environment Act 2021. Available at: Environment Act 2021

<sup>37</sup> The Wildlife and Countryside Act 1981 (as amended). Available from: Wildlife and Countryside Act 1981

<sup>38</sup> Four Countries' Biodiversity Group (2010) UK Post-2010 Biodiversity Framework [Online] Available from: UK Biodiversity Framework

<sup>39</sup> Natural Environment and Rural Communities Act 2006. Available from: <https://www.legislation.gov.uk/ukpga/2006/16/contents>

## 7.2.2 National and Local Planning Policies

- Overarching National Policy Statement for Energy (2025) (EN-1) with reference to Section 4.6 for assessment principles on Environmental and Biodiversity Net Gain and Section 5.4 for impacts<sup>40</sup>;
- National Policy Statement for Renewable Energy Infrastructure (2025) (EN-3) with reference to Paragraph 2.3.6 for National designations, Paragraphs 2.12.52 – 2.12.80 for impacts and paragraphs 2.12.114 – 2.12.120 for mitigation<sup>41</sup>;
- National Policy Statement for Electricity Networks Infrastructure (2025) (EN-5) with reference to paragraph 2.5.1 for environmental and biodiversity net gain, paragraphs 2.9.3 – 2.9.6 regarding impacts; and paragraphs 2.10.2 – 2.10.4 regarding mitigation<sup>42</sup>;
- National Planning and Policy Framework (NPPF) (2024) with reference to Chapter 15 – Conserving and enhancing the natural environment<sup>43</sup>;
- The Cumbria Biodiversity Action Plan<sup>44</sup>; and
- Cumbria Local Nature Recovery Strategy<sup>45</sup>.

## 7.2.2 Guidance

- CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine<sup>46</sup>;
- NatureScot (2025) Recommended bird survey methods to inform impact assessment of onshore wind farms<sup>47</sup>;
- NatureScot (2018) Assessing the impact of repowered wind farms on nature. Consultation Draft<sup>48,49</sup>;

40 Department for Energy Security and Net Zero (December 2025) Overarching National Policy Statement for Energy (EN-1) [Online] Available at: Overarching National Policy Statement for Energy (EN-1) – December 2025

41 Department for Energy Security and Net Zero (December 2025) Overarching National Policy Statement for Renewable Energy Infrastructure (EN-3) [Online] Available at: National Policy Statement for Renewable Energy Infrastructure (EN-3)

42 Department for Energy Security and Net Zero (December 2025) Overarching National Policy Statement for Electricity Networks Infrastructure (EN-5) [Online] Available at: National Policy Statement for Electricity Networks Infrastructure (EN-5) – December 2025

43 Ministry of Housing, Communities and Local Government (December 2024) National Planning and Policy Framework [Online] Available at: National Planning Policy Framework

44 Cumbria Biodiversity Action Plan (2001). Available online: <https://www.barrowbc.gov.uk/sites/default/files/attachment/5897.pdf>

45 Cumbria Local Nature Recovery Strategy (2025). Available online: <https://westmorlandandfurness.moderngov.co.uk/documents/s28249/Appendix+1+for+CAB+2101+-+Cumbria+Local+Nature+Recovery+Strategy.pdf>

46 CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management, Winchester.

47 NatureScot (2025). Recommended bird survey methods to inform impact assessment of onshore windfarms. Available online: <https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms#2-1-essential-preparatory-work>

48 NatureScot (then Scottish Natural Heritage) (2018) Assessing the impact of repowered wind farms on nature. Consultation Draft. Available online at: <https://www.nature.scot/sites/default/files/2018-06/Guidance%20-%20Assessing%20the%20impact%20of%20repowered%20wind%20farms%20on%20nature%20-%20consultation%20draft%20-%20June%202018.pdf>

49 NatureScot (2019) Consultation Analysis. Available at: <https://www.nature.scot/doc/repowering-consultation-analysis>

- Gov.uk (2015) Guidance: Wild birds: surveys and monitoring for onshore wind farms<sup>50</sup>;
- Stanbury, et al. (2021). Birds of Conservation Concern (BoCC): the population status of birds in the United Kingdom<sup>51</sup>;
- Scottish Natural Heritage (2014). Guidance - Repowering onshore wind farms: bird survey requirements<sup>52</sup>.
- NatureScot (2016). Assessing Connectivity with Special Protection Areas (SPAs)<sup>53</sup>;
- Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022). Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species<sup>54</sup>; and,
- Brides, K, *et al.* (2013). Mapping the distribution of feeding Pink-footed Geese in England<sup>55</sup>.
- Band, B. (2024). Using a collision risk model to assess bird collision risks for onshore wind farms<sup>56</sup>.

## 7.3 Preliminary Baseline Conditions

### 7.3.1 Desk Study Data Sources

For the background data search, good EIA practice includes identification of statutory designated sites of nature conservation interest within a potential Area of Influence (Aol) of the Proposed Development. Initially this is precautionary and included designated sites up to 20 km from the Proposed Development, taking consideration of species' core foraging ranges which may bring them into contact with the Site (e.g. pink-footed goose foraging range of up to 20 km<sup>53</sup>). Information on designated sites has been sourced from the MAGIC website<sup>57</sup>.

50 Natural England and Department for Environment, Food & Rural Affairs. Available at: <https://www.gov.uk/guidance/wild-birds-surveys-and-monitoring-for-onshore-wind-farms>

51 Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win, I. (2021) The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114, 723–747.

52 Available online, at: <https://www.nature.scot/sites/default/files/2017-09/Guidance%20note%20-%20Repowering%20onshore%20wind%20farms%20-%20bird%20survey%20requirements.pdf>

53 Available online, at: <https://www.nature.scot/doc/assessing-connectivity-special-protection-areas>

54 Available online, at: <https://www.nature.scot/doc/naturescot-research-report-1283-disturbance-distances-review-updated-literature-review-disturbance>

55 Available online, at: [brides\\_et\\_al\\_2013\\_mapping\\_distribution\\_of\\_feeding\\_pinkfooted\\_geese\\_in\\_england\\_wwt\\_natural\\_england\\_report.pdf](https://www.nature.scot/sites/default/files/2013-09/brides_et_al_2013_mapping_distribution_of_feeding_pinkfooted_geese_in_england_wwt_natural_england_report.pdf)

56 Available online at: NatureScot Research Report 909 - Using a collision risk model to assess bird collision risks for onshore wind farms | NatureScot

57 Multi-Agency Geographic Information for the Countryside (MAGIC) maps. Available at: <https://magic.defra.gov.uk/home.htm>

Historic desktop bird records were obtained from Cumbria Biodiversity Data Centre (CBDC) and Lancashire Environment Record Network (LERN).

### 7.3.2 Designated Sites

Statutory designated sites with ornithological interest within 20 km of the Site are summarised in **Table 7.1** and shown on **Figure 7.1**.

Table 7.1: Designated Sites

| Designated Site                                  | Distance from Proposed Site | Qualifying Features / Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Burns Beck Moss SSSI                             | 4.8 km south                | A rare, ecologically significant wetland nature reserve near Sedbergh, Cumbria, featuring a unique combination of nutrient-poor raised mires and nutrient-rich valley mires. The SSSI is not designated for ornithology but is known to acts as a refuge for specialized wildlife, including varied bird species such as tawny owl, heron, curlew, snipe, sedge warbler, reed bunting, willow warbler, grasshopper warbler, meadow pipet and whinchat <sup>58</sup> .                                                                                                                    |
| Shap Fells SSSI                                  | 10.4 km north               | The site supports the largest and most diverse upland breeding bird assemblage in West Cumbria. This is attributable to the extent, quality and diversity of upland vegetation within the site, particularly the abundance and structure of heather-dominated communities. Breeding waders include curlew, lapwing, snipe, redshank, dunlin and golden plover. Whilst among the raptors recorded as breeding are peregrine falcon, merlin and short-eared owl. Other breeding birds present include raven and twite, as well as red grouse which is managed for sport <sup>59</sup> .    |
| Crosby Ravensworth Fell SSSI                     | 12.2 km north               | The site supports an assemblage of typical moorland breeding birds such as golden plover, red grouse, redshank, oystercatcher, curlew and lapwing <sup>60</sup> .                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Sunbiggin Tarn & Moors and Little Asby Scar SSSI | 13.2 km north-east          | The whole site is very important ornithologically with the extensive areas of calcareous open water and fen, as well as the heathland, providing suitable cover and food for many breeding, passage and wintering bird species. There is a nationally important colony of over 12,000 breeding pairs of black-headed gulls around Sunbiggin Tarn (exceeding 1% of the British breeding population). Several species of waterfowl also breed around the tarns or on the moor (wigeon, teal, tufted duck, gadwall and mallard). Other breeding species of note include little grebe, sedge |

58 Cumbria Wildlife Trust. (n.d.). Burns Beck Moss. Available at: <https://www.cumbriawildlifetrust.org.uk/nature-reserves/burns-beck-moss>

59 <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1000081.pdf>

60 <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1005898.pdf>

| Designated Site                      | Distance from Proposed Site | Qualifying Features / Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      |                             | warbler and water rail, with the wetlands also being well used by lapwing, curlew, redshank and snipe. The area is important for wintering wildfowl and other birds and also seems to be a well-used resting place for many species on passage. Regularly recorded species include goldeneye, pochard, whooper swan, goosander, whimbrel, merlin, peregrine, raven and short-eared owl <sup>61</sup> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Morecambe Bay and Duddon Estuary SPA | 13.2 km south-west          | <p>The SPA comprises areas for breeding seabirds, foraging breeding seabirds, non-breeding seabirds and waterbirds utilising a range of habitats. In the breeding season the area regularly supports nearly 62,000 individual sea birds and, in the winter, it regularly supports over 210,000 individual waterfowl.</p> <p>The site supports greater than 1% of the GB population of three Annex I species in the breeding season (little tern, sandwich tern, common tern) and six Annex I species in the non-breeding season (whooper swan, little egret, golden plover, bar-tailed godwit, ruff, Mediterranean gull). In addition, the site supports over 1% of the biogeographical populations of 16 regularly occurring migratory birds – two in the breeding season (lesser black-backed gull and herring gull) and 14 in the non-breeding season (redshank, knot, pintail, ringed plover, pink-footed goose, shelduck, oystercatcher, grey plover, dunlin, curlew, turnstone, black-tailed godwit, sanderling, lesser black-backed gull).</p> <p>It also regularly supports a breeding seabird assemblage of over 20,000 individuals, including the qualifying breeding features as main components, and a waterbird assemblage of over 20,000, including all non-breeding qualifying features as well as 19 other species as main components. Several of these species occur in nationally and internationally important numbers and it is not uncommon during severe weather for the SPA to attract even greater numbers with birds attracted from other areas by the relatively mild climate and abundant food resources<sup>62</sup>.</p> |
| Morecambe Bay SSSI                   | 13.2 km south-west          | The estuary is the second most important in the UK after The Wash as a feeding and roosting ground for large concentrations of wintering wading birds. It regularly supports 110,000 wintering waders with 9 species occurring at nationally important                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

<sup>61</sup> <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1007193.pdf>

<sup>62</sup> <https://designatedsites.naturalengland.org.uk/SiteGeneralDetail.aspx?SiteCode=UK9020326&SiteName=MORECAMBE%20BAY&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=>

| Designated Site      | Distance from Proposed Site | Qualifying Features / Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |                             | <p>levels (numbers exceeding 1% of the British population). These are oystercatcher (41,000), dunlin (31,000), knot (14,000), curlew (8,000), redshank (5,000), turnstone (1,200), bar-tailed godwit (3,200), grey plover (700) and ringed plover (310); the first 6 are recorded at levels of international significance (numbers exceeding 1% of the European population). Internationally important numbers of ringed plover (1,200) are recorded on passage in the spring, and nationally important numbers of dunlin (3,000) and redshank (5,600) in the autumn. Although no discrete populations of sanderling are identifiable during migration, passage counts indicate the international significance of Morecambe Bay for this species with a recent spring count of 8,500.</p> <p>The Bay also regularly supports 16,000 wintering wildfowl with internationally important numbers of shelduck (3,200) and pintail (2,500). A further 3 species reach nationally important levels namely eider (3,400), goldeneye (300) and red breasted merganser (130)<sup>63</sup>.</p> |
| Morecambe Bay Ramsar | 13.2 km south-west          | <p>The site is a staging area for migratory waterfowl including internationally important numbers of passage ringed plover.</p> <p><b>Qualifying Species/populations:</b></p> <p><b>Species regularly supported during the breeding season:</b> Lesser black-backed gull, Herring gull, and Sandwich tern.</p> <p><b>Species with peak counts in spring/autumn:</b></p> <p>Great cormorant = 967 individuals, representing an average of 4.2% of the GB population</p> <p>Shelduck = 7,032 individuals, representing an average of 2.3% of the population.</p> <p>Pintail = 3,743 individuals, representing an average of 6.2% of the population</p> <p>Eider = 5,657 individuals, representing an average of 7.7% of the GB population.</p> <p>Oystercatcher = 66,577 individuals, representing an average of 6.5% of the population.</p> <p>Ringed plover = 1,041 individuals, representing an average of 1.4% of the population.</p>                                                                                                                                               |

63 <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1001807.pdf>

| Designated Site | Distance from Proposed Site | Qualifying Features / Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |                             | <p>Grey plover = 1,655 individuals, representing an average of 3.1% of the GB population.</p> <p>Sanderling = 703 individuals, representing an average of 3.4% of the GB population.</p> <p>Curlew = 20,018 individuals, representing an average of 4.7% of the population.</p> <p>Redshank = 8,816 individuals, representing an average of 3.5% of the population.</p> <p>Ruddy turnstone = 1,371 individuals, representing an average of 1.4% of the population.</p> <p>Lesser black-backed gull = 40,393 individuals, representing an average of 7.6% of the population.</p> <p><b>Species with peak counts in winter:</b></p> <p>Great-crested grebe = 217 individuals, representing an average of 1.3% of the GB population.</p> <p>Pink-footed goose = 3,665 individuals, representing an average of 1.5% of the population.</p> <p>Wigeon = 6,133 individuals, representing an average of 1.5% of the GB population.</p> <p>Goldeneye = 285 individuals, representing an average of 1.1% of the GB population.</p> <p>Red-breasted merganser = 327 individuals, representing an average of 3.3% of the GB population.</p> <p>Golden plover = 4,073 individuals, representing an average of 1.6% of the GB population.</p> <p>Lapwing = 16,492 individuals, representing an average of 1% of the GB population.</p> <p>Red knot = 66,335 individuals, representing an average of 14.7% of the population.</p> <p>Dunlin = 26,416 individuals, representing an average of 1.9% of the population.</p> <p>Bar-tailed godwit = 4,579 individuals, representing an average of 3.8% of the population.</p> <p><b>Species currently occurring at levels of national importance:</b></p> |

| Designated Site                 | Distance from Proposed Site | Qualifying Features / Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 |                             | <p><b>Species regularly supported during the breeding season:</b></p> <p>Black-headed gull = 1,620 apparently occupied nests, representing an average of 1.2% of the GB population.</p> <p><b>Species with peak counts in spring/autumn:</b></p> <p>Ruff = 33 individuals, representing an average of 4.7% of the GB population.</p> <p>Whimbrel = 226 individuals, representing an average of 7.5% of the GB population.</p> <p>Spotted redshank = 8 individuals, representing an average of 5.8% of the GB population.</p> <p>Common greenshank = 79 individuals, representing an average of 13.2% of the GB population.</p> <p>Black-headed gull = 19,907 individuals, representing an average of 1.1% of the GB population.</p> <p><b>Species with peak counts in winter:</b></p> <p>Teal = 2,363 individuals, representing an average of 1.2% of the GB population.</p> <p>Black-tailed godwit = 218 individuals, representing an average of 1.4% of the GB population.<sup>64</sup></p> |
| Orton Pastures SSSI             | 13.6 km north               | The pastures on the site are used by breeding waders, particularly curlew, lapwing, snipe and redshank <sup>65</sup> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| River Eden and Tributaries SSSI | 15 km north-east            | The River Eden supports a diverse assemblage of breeding bird species associated with rivers and adjacent wetland habitats. The breeding waders are particularly notable with redshank, curlew, oystercatcher, snipe and common sandpiper. There are also dipper, grey wagtail and kingfishers on the lower reaches. The Eden and its tributaries, especially the lower Eden, support high numbers of nesting sand martins.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

<sup>64</sup> <https://jncc.gov.uk/jncc-assets/RIS/uk11045.pdf>

<sup>65</sup> <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1002373.pdf>

| Designated Site      | Distance from Proposed Site | Qualifying Features / Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |                             | <p>The natural sandy banks of the river act as one unit which collectively supports the largest number of breeding sand martins in Cumbria.</p> <p>The Eden valley also provides habitat for over 1% of the national population of wintering whooper swans. However, the main feeding grounds of the swans are on cropland and improved grassland areas which are outside the SSSI boundary. The swans congregate at two distinct sites in the middle reaches around Culgaith and Crosby-on-Eden further downstream. The middle reaches are also of regional importance for wintering wildfowl particularly surface feeding ducks and geese<sup>66</sup>.</p> |
| Smardale Gill SSSI   | 15.9 km north-east          | The woodland within the site is particularly important for breeding birds, with over 30 species regularly recorded. These include redstart, wood warbler, pied flycatcher, treecreeper, long-tailed tit and sparrowhawk. In total over 50 bird species have been recorded as breeding within the site <sup>67</sup> .                                                                                                                                                                                                                                                                                                                                         |
| Ash Fell SSSI        | 16.4 km north-east          | Ash Fell supports a good range and number of breeding birds, including red grouse, curlew, lapwing and, notably, twite <sup>68</sup> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Hawes Water SSSI     | 18.2 km south-west          | The wide range of habitats support an outstanding breeding bird community <sup>69</sup> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Leighton Moss Ramsar | 19.7 km south-west          | Leighton Moss Ramsar is a large reedbed habitat which is of particular importance as a northern outpost for breeding populations of great bittern and Eurasian marsh harrier and also for species occurring in nationally important numbers outside the breeding season include northern shoveler and water rail <sup>70</sup> .                                                                                                                                                                                                                                                                                                                              |

66 <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/2000215.pdf>

67 <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1002478.pdf>

68 <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1003943.pdf>

69 <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1001594.pdf>

70 <https://jncc.gov.uk/jncc-assets/RIS/UK11035.pdf>

| Designated Site    | Distance from Proposed Site | Qualifying Features / Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Leighton Moss SPA  | 19.7 km south-west          | Leighton Moss holds the largest area of reed-bed in northern England and is designated for breeding bittern (4 pairs, 20% of UK breeding population) and is at the north-western limit of the British range for bittern and bearded tit <sup>71</sup> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Leighton Moss SSSI | 19.7 km south-west          | The reedbeds on the site are important as a northern outpost of broadland-type avifauna, with nationally important breeding populations of bittern (about 12 pairs, i.e. about 25% of the current British population), and bearded tit (about 30 pairs), but the diversity of habitat supports a wide range of birds with over 65 species breeding regularly. These include important populations of pochard (about 8 pairs) and shoveler (about 15 pairs), a large population of reed warbler (one of the most northerly colonies in Britain), sedge and grasshopper warblers, water rail, spotted crake and a wide range of waterfowl. The site also supports a variety of passage and wintering waterfowl and other birds, including nationally important numbers of teal (up to 1,800), shoveler (up to 220) and gadwall (up to 35). <sup>72</sup> |

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71

<https://designatedsites.naturalengland.org.uk/ConservationAdvice.aspx?SiteCode=UK9005091&SiteName=Leighton%20Moss&SiteNameDisplay=Leighton%20Moss%20SPA&countyCode=&responsiblePerson=&SeaArea=&IFCAAArea=&HasCA=1&NumMarineSeasonality=1&SiteNameDisplay=Leighton%20Moss%20SPA>

72 <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1001669.pdf>

### 7.3.3 Protected Species Records

CBDC and LCC returned records of 71 species of conservation importance within 5 km of the Site within the last 10 years. Species of conservation importance are defined as any that meet one or more of the following criteria:

- Listed on Schedule 1 of the Wildlife and Countryside Act 1981 (WACA);
- Listed on Annex I of the Birds Directive;
- Red- or Amber-listed Birds of Conservation Concern (BoCC); and/or
- Species listed on the Cumbria Local Nature Recovery Strategy (LNRS).

The species are generally typical of the geographic area and diverse habitats in the search area.

### 7.3.4 Baseline Survey Methods

Considering the location and characteristics of the Proposed Development as well as findings from surveys conducted to date, one year of bird surveys (one breeding season, and one non-breeding season) are proposed to be suitable to inform the impact assessment. This is based on species present within the Site and flight activity recorded during the surveys conducted to date. Consultation is being sought with Natural England to confirm that a single year is suitable. In the absence of any detailed survey guidance in England, all surveys have and will continue to follow prevailing NatureScot guidance<sup>73</sup>. ERM have submitted the ornithological survey scope and approach to Natural England for consultation<sup>73</sup>.

#### 7.3.4.1 Flight Activity Surveys

Flight activity surveys (FAS) have been completed for one non-breeding season (September 2025 – February 2026) and at the time of writing surveys are in the process of being carried out for a complete breeding season (March 2026 – August 2026).

Given that the wind farm is operational, behavioural categories have been assigned to observations of bird interactions with turbines in accordance with established good practice<sup>74</sup>. The target species comprises protected raptors and owls<sup>75</sup>, wildfowl, waders and gulls.

Based on inspection of Ordnance Survey (OS) maps, viewshed analysis and ground-truthing surveys that were completed in February 2025 as part of the first visit,

<sup>73</sup> Submitted to Natural England via their discretionary advice service (DAS) on 18th of August 2026

<sup>74</sup> Meredith, C., Venosta, M., & Ransom, R. (2002) Cordington Wind Farm Avian Avoidance Behaviour Report, 2002. Biosis Research Report.

<sup>75</sup> Species listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended and/or Annex I of the EU Birds Directive).

watches from two vantage point (VP) locations are being undertaken. These locations provide full viewshed coverage of the proposed turbine locations and up to 500 m from most turbines, with surveyors split into east and south facing viewsheds, surveying for the duration of each VP watch as illustrated in **Figure 7.2**.

While the inclusion of three VPs was considered, ERM concluded that, given the small size of the Site, a third VP would result in significantly overlapped viewsheds and the presence of more observers risked influencing bird behaviour within the Site. VPs are surveyed simultaneously, to ensure two people are present on site at any one time to meet health and safety policy.

Both VPs fall within the viewshed of the other; however, they are outside the visible area. VP 1 is close to a proposed turbine location. The VP locations chosen provide the best views of the area within the bounds of permitted access and topography of the Site, and observers try to make themselves inconspicuous to avoid or minimise the potential of influencing bird behaviour.

Survey results and observations show no evidence that the presence of observers affect bird behaviour or flight activity. An average of six hours of observation, per VP, is completed per month, totalling 36 hours per season.

#### 7.3.4.2 Foraging Goose Surveys

As illustrated on **Figure 7.1**, the Site lies approximately 13.2 km from the Morecambe Bay Ramsar / Morecambe Bay and Duddon Estuary SPA, which is within the core foraging range of non-breeding migratory pink-footed goose (*Anser brachyrhynchus*)<sup>53</sup>, a qualifying feature of the Ramsar/SPA.

Habitats within the Proposed Development are unsuitable for foraging geese, although some adjacent fields of pasture could be used opportunistically. Monthly surveys were conducted across the non-breeding season (September 2025 – February 2026) to identify if geese and other migratory waterfowl surveys were present through driven transect surveys with field checks and short VPs to complement the FAS being undertaken, within and up to 1 km from the Site (illustrated on **Figure 7.3**).

#### 7.3.4.3 Moorland Breeding Bird Surveys

Moorland Breeding Bird Surveys (MBBS) have been undertaken across one season, following and adapted Brown and Shepherd (1993)<sup>47</sup> methodology.

Four survey visits were completed at least seven days apart between April and July 2026. The surveys provided coverage of open habitat across the Site plus a surrounding 500 m buffer (where accessible) as illustrated on **Figure 7.3**. The surveys focused on recording breeding moorland waders.

#### 7.3.4.4 Breeding Raptor Surveys

Breeding Raptor Surveys were undertaken in line with NatureScot guidance between March and June 2026, based on methods described in Hardy et al. (2013)<sup>76</sup>.

The surveys provided coverage of potentially suitable breeding habitat across the Site plus a surrounding 2 km buffer (where accessible) as illustrated on **Figure 7.3**. Surveys involved completing a combination of watches from VPs overlooking areas of suitable breeding habitat to identify any evidence of breeding (such as birds performing breeding displays or carrying prey), and walkovers of suitable habitat to search for nests and other signs of raptor presence (such as prey remains, pellets or feathers).

### 7.3.5 Baseline Surveys Results to Date

#### 7.3.5.1 Flight Activity Surveys (FAS)

A total of 307 flights have been recorded between September 2025 and July 2026, including 15 target species: Greylag Goose, Whooper Swan, Mallard, Oystercatcher, Golden Plover, Lapwing, Curlew, Black-headed Gull, Common Gull, Great Black-backed Gull, Lesser Black-backed Gull, Herring Gull, Grey Heron, Red Kite, and Peregrine. Flights of foraging and commuting gulls have made up a large part of the flight activity within the Site. Secondary species recorded have included Sparrowhawk and Buzzard. Target species flights are summarised in **Table 7.2**.

The general flight pattern currently indicates bird avoidance around the existing five turbines of the Lambrigg Wind Farm. Up until now, flight activity has been most densely recorded in the north-east of the Site.

**Table 7.2 Target Species Flight Summary**

| Target Species | No. of Flights | General Behaviour                                                                                                    |
|----------------|----------------|----------------------------------------------------------------------------------------------------------------------|
| Greylag goose  | 10             | Small groups (nine flights of ≤4 birds, one flight of 45 birds) recorded in transit through Site and out of sight.   |
| Whooper swan   | 1              | One group of 13 birds flying in transit through the Site and out of sight.                                           |
| Mallard        | 7              | Either individual birds or pairs recorded in transit and either flying out of sight or recorded to land within Site. |
| Oystercatcher  | 23             | Small groups of ≤4 birds predominantly in transit through Site and flying out of sight but some                      |

<sup>76</sup> Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013) Raptors: a field guide to survey and monitoring. Third Edition. The Stationary Office, Edinburgh.

| Target Species           | No. of Flights | General Behaviour                                                                                                                                                                                                               |
|--------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                | records of birds landing and foraging or performing courtship.                                                                                                                                                                  |
| Golden plover            | 1              | One bird recorded in flight through Site and out of sight.                                                                                                                                                                      |
| Lapwing                  | 3              | One group of two birds and one individual bird were recorded in transit flying through the Site. Another group of 14 birds were recorded in transit outside of the Site before landing.                                         |
| Curlew                   | 14             | Small groups of $\leq 3$ birds predominantly in courtship flights and regularly landing, within and outside of the Site.                                                                                                        |
| Black-headed gull        | 6              | Small groups of $\leq 3$ birds predominantly in transit within and outside of the Site before flying out of sight.                                                                                                              |
| Common gull              | 32             | Typically, small groups of birds (median 2, peak count 27) in transit within and outside of the Site before flying out of sight.                                                                                                |
| Great black-backed gull  | 17             | Small groups of $\leq 6$ birds predominantly in transit within and outside of the Site before flying out of sight but recorded to land and forage within the Site on one occasion.                                              |
| Lesser black-backed gull | 160            | Typically, individuals or small groups of birds (median 1, peak count 22) in transit within and outside of the Site before flying out of sight, with some records of birds landing and foraging within and outside of the Site. |
| Herring gull             | 18             | Typically, individuals or small groups of birds (median 1, peak count 33) in transit within and outside of the Site before flying out of sight with some records of birds landing and foraging within and outside of the Site.  |
| Grey heron               | 7              | Individual birds recorded typically in transit within and outside of the Site before flying out of sight.                                                                                                                       |
| Red kite                 | 1              | One bird recorded in flight outside of the Site in transit before flying out of sight.                                                                                                                                          |
| Peregrine                | 7              | Mostly records of individual birds but one record of two birds. Records typically consisted of birds in transit within and outside of the Site with one record of an individual hunting outside of the Site.                    |

### 7.3.5.2 Goose Foraging Surveys

No pink-footed goose activity was recorded during the Foraging Goose Surveys, nor any other surveys completed to-date. Brides, *et al.* (2013)<sup>55</sup> shows foraging areas are typically closer to the coast, and mostly south of the bay, with no records within proximity of the Site.

### 7.3.5.3 Moorland Breeding Bird Surveys

MBBS confirmed breeding curlew and possible breeding oystercatcher territories within the MBBS survey area. The passerine assemblage is typical of the habitat, largely comprising species such as skylark and meadow pipit. Detailed territory analysis across the Site is currently undergoing.

### 7.3.5.4 Breeding Raptor Surveys

No breeding Schedule 1 raptor territories were recorded across the raptor surveys. Buzzard was recorded nesting within the Site and Kestrel and Sparrowhawk were recorded foraging / passing through and are assumed to breed in the wider area.

## 7.3.6 Data Analysis

To analyse the breeding bird data (MBBS and breeding raptor surveys), all registrations of these species from all surveys during the breeding season will be transferred from field maps to produce 'species summary maps' from which the number and distribution of likely breeding territories for each species could be determined by identifying clusters of activity in the same area on separate visits. This method is based on that described by Bibby *et al.* (2000)<sup>77</sup> with an element of professional judgement.

Regarding the analysis of FAS data, NatureScot guidance on repowering wind farms highlights that existing turbine infrastructure can influence bird flight behaviour, and therefore flight activity data collected within operational sites may not provide a reliable basis for Collision Risk Modelling (CRM)<sup>48</sup>. As such, it is expected that CRM across much of the Site will not be possible and data collected during FAS will be used to present a qualitative assessment of potential risk.

Some of the proposed turbine locations are located up to approximately 930 m from existing turbines. A review of survey results will be carried out to determine whether CRM may be beneficial in this area.

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<sup>77</sup> Bibby, C. J., Burgess, N.D. and Hill, D. A. (2000). 3 – Territory mapping methods. Bird census techniques. Elsevier, London, UK.

## 7.4 Mitigation

Embedded mitigation measures will be developed prior to, and during, development design as well as through good practice guidance and environmental management plans during the construction phase.

Impacts on breeding bird species will be avoided or mitigated by careful design and the application of construction phase measures, such as adhering to disturbance buffers and timing activity to avoid sensitive periods for species.

Where necessary, pre-construction bird surveys will be carried out to inform the requirements for any Bird Protection Plan (BPP), and an Ecological Clerk of Works (ECoW) will be present during construction to ensure compliance with planning conditions, project environmental protection and management documentation, good practice, and protected species legislation.

## 7.5 Proposed Scope of the EIA

The impact assessment will be completed with reference to CIEEM (2024) guidance<sup>46</sup>.

The following potential effects on ornithological receptors will be considered:

- Disturbance of birds during construction or operation of the Proposed Development;
- Displacement of birds from the Site and/or barrier effects due to the presence of turbines during operation of the Proposed Development;
- Non-quantified collision risk with operational turbines;
- Biodiversity enhancement and habitat improvement through the proposed outline Habitat Management and Monitoring Plan (HMMP);
- Cumulative effects with other developments in the wider area.

On the basis of the sensitivities described above, the potential receptors proposed to be scoped into or out of the EIA for this topic are presented in **Table 7.3**:

**Table 7.3 Ornithological Receptors to be Scoped In or Out of the Assessment**

| Potential Effect / Topic        | Scope In / Out |
|---------------------------------|----------------|
| River Eden and Tributaries SSSI | Scoped out     |
| Ash Fell SSSI                   | Scoped out     |
| Smardale Gill SSSI              | Scoped out     |

| Potential Effect / Topic                         | Scope In / Out    |
|--------------------------------------------------|-------------------|
| Sunbiggin Tarn & Moors and Little Asby Scar SSSI | Scoped out        |
| Orton Pastures SSSI                              | Scoped out        |
| Crosby Ravensworth Fell SSSI                     | Scoped out        |
| Shap Fells SSSI                                  | Scoped out        |
| Hawes Water SSSI                                 | Scoped out        |
| Leighton Moss Ramsar & SPA                       | Scoped out        |
| Leighton Moss SSSI                               | Scoped out        |
| Morecambe Bay and Duddon Estuary SPA             | Scoped out        |
| Morecambe Bay SSSI                               | Scopes out        |
| Morecambe Bay Ramsar                             | Scoped out        |
| Burns Beck Moss SSSI                             | Scoped out        |
| Breeding Wader species                           | <b>Scoped in</b>  |
| Waterfowl species                                | Scoped out        |
| Schedule 1 Raptor species                        | <b>Scoped in*</b> |
| Gull species                                     | <b>Scoped in*</b> |
| Passerine species                                | Scoped out        |

\*Provisionally scoped in for assessment on the basis that FAS surveys are still ongoing but when finished the finalised data will be reviewed to identify potential collision risk and barrier effects.

## 7.6 Proposed Scope of the HRA

A Habitat Regulations Assessment (HRA) may be required for the Competent Authority to fulfil their duty under the Habitat Regulations<sup>35</sup>.

Based on the unsuitable habitats within the Site, and survey and desk study indicating no or negligible presence in the area, it is proposed that the impacts of the Proposed Development on Pink-footed Goose of Morecambe Bay Ramsar and Morecambe Bay and Duddon Estuary SPA can be discounted at Screening stage. The impacts on

designated gull species – Lesser Black-backed Gull and Herring Gull – will be considered following the completion of FAS surveys, but it is likely these birds arise from more local breeding colonies not part of the SPA or Ramsar.

Moreover, although not designated for ornithological features, it is acknowledged that if any proposed watercourse crossings from the Proposed Development traverse tributaries of the Lambrigg Beck, the River Kent SAC will also be considered as part of this HRA.

## 7.7 Questions to consultees

Key questions for consultees are:

- Q7.1 - Do you agree that the data sources identified and that one year of survey is sufficient to inform the ornithological baseline for the EIA (and therefore that no further baseline data collection is merited)?
- Q7.2 - Do you agree with the proposed scope of assessment in **Section 5.4.2** and have all ornithological receptors and potential impact pathways that could result from the Proposed Development been identified?
- Q7.3 - Do you have any information that will be useful in the preparation of the Ornithology assessment?

# 8. Hydrology

## 8.1 Introduction

This chapter of the Scoping Report sets out the baseline conditions of the Site in relation to hydrology, proposed methodology to be used in the EIA, and the scope of the assessment that will be covered in the hydrology chapter of the ES.

This hydrology scoping chapter is supported by the following figures:

- **Figure 8.1:** Hydrology Study Area;
- **Figure 8.2:** Surface Water Hydrology;
- **Figure 8.3:** EA Flood Map Rivers and Sea; and
- **Figure 8.4:** EA Surface Water Flood Map.

## 8.2 Legislation Policy & Guidance

### 8.2.1 Legislation

The Water Framework Directive (WFD) (2000/60/EC)<sup>78</sup> establishes a framework for the protection, improvement, and sustainable use of all water environments through setting ecological targets and environmental objectives. This directive resulted in the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017<sup>79</sup>, which transposed the WFD into law in England and Wales.

Other legislation relevant to this assessment are:

- Water Act 2014<sup>80</sup>;
- Land Drainage Act 1991<sup>81</sup>;
- Water Resources Act 1991<sup>82</sup>;
- Environment Act 2021<sup>83</sup>;
- Environmental Protection Act 1990<sup>84</sup>;

78 European Parliament (2000) Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy ("The Water Framework Directive"). Available online at: [https://environment.ec.europa.eu/topics/water/water-framework-directive\\_en](https://environment.ec.europa.eu/topics/water/water-framework-directive_en) (Accessed March 2026)

79 UK Government. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Available online at: <https://www.legislation.gov.uk/uksi/2017/407/contents> (Accessed March 2026)

80 UK Government. Water Act 2014. Available online at: <https://www.legislation.gov.uk/ukpga/2014/21/contents> (Accessed March 2026)

81 UK Government. Land Drainage Act 1991. Available online at: <https://www.legislation.gov.uk/ukpga/1991/59/contents> (Accessed March 2026)

82 UK Government. Water Resources Act 1991. Available online at: <https://www.legislation.gov.uk/ukpga/1991/57/contents> (Accessed March 2026)

83 UK Government. Environment Act 2021. Available online at: <https://www.legislation.gov.uk/ukpga/2021/30/contents> (Accessed March 2026)

84 UK Government. Environmental Protection Act 1990. Available online at: <https://www.legislation.gov.uk/ukpga/1990/43/contents> (Accessed March 2026)

- The Environmental Permitting (England and Wales) Regulations 2016<sup>85</sup>;
- The Control of Pollution (Oil Storage) (England) Regulations 2001<sup>86</sup>;
- The Environmental Damage (Prevention and Remediation) (England) Regulations 2015<sup>87</sup>;
- The Flood Risk Regulations 2009<sup>88</sup>;
- Flood and Water Management Act 2010<sup>89</sup>;
- The Water Supply (Water Quality) Regulations 2018<sup>90</sup>; and
- The Private Water Supplies (England) (Amendment) Regulations 2018<sup>91</sup>.

## 8.2.2 National Policy

The National Planning Policy Framework (NPPF) (2026)<sup>92</sup> sets out the UK Government's planning policies for England.

The energy National Policy Statements (NPSs) provide the primary policy basis for the consideration of Nationally Significant Infrastructure Projects (NSIPs). Policies EN-1 to EN-6 outline the government's policy for delivering major energy infrastructure. The NPSs that are of relevance to the Proposed Development are the:

- Overarching National Policy Statement for Energy (NPS EN-1) (2025)<sup>93</sup>;
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (2025)<sup>94</sup>; and

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85 UK Government. The Environmental Permitting (England and Wales) Regulations 2016. Available online at: <https://www.legislation.gov.uk/ukSI/2016/1154/contents> (Accessed March 2026)

86 UK Government. The Control of Pollution (Oil Storage) (England) Regulations 2001. Available online at: <https://www.legislation.gov.uk/ukSI/2001/2954/contents> (Accessed March 2026)

87 UK Government. The Environmental Damage (Prevention and Remediation) (England) Regulations 2015. Available online at: <https://www.legislation.gov.uk/ukSI/2015/810/contents> (Accessed March 2026)

88 UK Government. The Flood Risk Regulations 2009. Available online at: <https://www.legislation.gov.uk/ukSI/2009/3042/made> (Accessed March 2026)

89 UK Government. The Flood and Water Management Act 2010. Available online at: <https://www.legislation.gov.uk/ukpga/2010/29/contents> (Accessed March 2026)

90 UK Government. The Water Supply (Water Quality) Regulations 2018. Available online at: <https://www.legislation.gov.uk/WSI/2018/647/contents> (Accessed March 2026)

91 UK Government. The Private Water Supplies (England) (Amendment) Regulations 2018. Available online at: <https://www.legislation.gov.uk/ukSI/2018/707/contents/made> (Accessed March 2026)

92 UK Government (2024) National Planning Policy Framework. Available online at: [https://assets.publishing.service.gov.uk/media/6a8334c03bd75b81e2329ac4/National\\_Planning\\_Policy\\_Framework.pdf](https://assets.publishing.service.gov.uk/media/6a8334c03bd75b81e2329ac4/National_Planning_Policy_Framework.pdf) (Accessed September 2026)

93 UK Government (2025) Overarching National Policy Statement for Energy (EN-1) Available online at: <https://assets.publishing.service.gov.uk/media/695d1015f41883f4e50ed9ab/overarching-national-policy-statement-for-energy-en-1-web-accessible.pdf> (Accessed March 2026)

94 UK Government (2025) National Policy Statement for Renewable Energy Infrastructure (EN -3) Available online at: <https://assets.publishing.service.gov.uk/media/695d1368b5c46330350ed9a2/national-policy-statement-for-renewable-energy-infrastructure-en-3-web-accessible.pdf> (Accessed March 2026)

- National Policy Statement for Electricity Networks (NPS EN-5)<sup>95</sup>.

### 8.2.3 Local Policy

The Study Area is located wholly within the Westmorland and Furness Council area and they are the LLFA. The Study Area is not located within any IDB districts or Critical Drainage Areas (CDAs), thus there are no locally identified areas of managed drainage concern. As of April 2023, South Lakeland District Council, along with Barrow Borough Council, Eden District Council, and Cumbria County Council, were abolished and replaced by Westmorland and Furness Council, as a unitary authority across all these areas. Therefore, some planning policy documents created by South Lakeland District Council are still utilised for the area where the Site is.

This assessment has been made with consideration of the following local policy:

- South Lakeland Local Development Framework – Core Strategy<sup>96</sup> adopted in 2010 which contains the following policies relevant to hydrology and flood risk:
  - CS1.1 Sustainable Development Principles;
  - CS8.1 Green Infrastructure; and
  - CS8.8 Development and Flood Risk.
- Westmorland and Furness Council Flood Risk Management Strategy<sup>97</sup>; and
- South Lakeland District – Strategic Flood Risk Assessment<sup>98</sup>.

### 8.2.4 Guidance

In addition to specific legislative and planning policy requirements, a range of guidance documents have been published to provide information on statutory responsibilities and good environmental practices. These will inform the impact assessment and be taken into consideration during production of the final Construction Environmental Management Plan (CEMP).

Construction Industry Research and Information Association (CIRIA):

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<sup>95</sup> UK Government (2025) National Policy Statement for Electricity Networks. Available online at:

<https://assets.publishing.service.gov.uk/media/695d12e1b5c46330350ed9a1/national-policy-statement-for-electricity-networks-infrastructure-en-5-web-accessible.pdf> (Accessed March 2026)

<sup>96</sup> South Lakeland District Council (2010) South Lakeland Local Development Framework – Core Strategy. Available online at:

<https://www.southlakeland.gov.uk/media/3521/cs01-core-strategy-october-2010.pdf> (Accessed March 2026)

<sup>97</sup> Westmorland and Furness Council (2025). Local Flood Risk Management Strategy. Available online at:

<https://www.westmorlandandfurness.gov.uk/planning-and-building-control/environment-and-planning/flooding-management-and-prevention/flood-risk-management-strategy> (Accessed March 2026)

<sup>98</sup> Jacobs – Prepared for South Lakeland District Council (2007). Strategic Flood Risk Assessment. Available online at:

<https://www.southlakeland.gov.uk/media/6096/eve07-strategic-flood-risk-assessment-2007.pdf> (Accessed March 2026)

- Control of Water Pollution from Construction Sites (C532)<sup>99</sup>;
- Environmental good practice on site guide (C741)<sup>100</sup>;
- The SuDS Manual (C753)<sup>101</sup>; and
- Culvert, screen and outfall manual (C786F)<sup>102</sup>.

#### EA Guidance:

- Applying for a water abstraction or impounding license<sup>103</sup>;
- Discharges to surface water and groundwater: environment permits<sup>104</sup>;
- Oil storage regulations for businesses<sup>105</sup>;
- Flood risk activities: environmental permits<sup>106</sup>; and
- Manage water on land: guidance for land managers<sup>107</sup>.

#### Other Guidance:

- British Standard Code of Practice for Earthworks BS 6031<sup>108</sup>;
- Highways England. Road drainage and the water environment<sup>109</sup>;
- National standards for sustainable drainage systems (SuDS)<sup>110</sup>; and
- Westmorland and Furness Council: Apply for consent for works on ordinary watercourses<sup>111</sup>.

99 CIRIA (2001) Control of water pollution from construction sites: Guidance for consultants and contractors. Available online at: [https://www.ciria.org/CIRIA/CIRIA/Item\\_Detail.aspx?iProductCode=C532&Category=BOOK](https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C532&Category=BOOK) (Accessed March 2026)

100 CIRIA (2023) Environmental good practice on site guide (fifth edition). Available online at: [https://www.ciria.org/ci/iCore/Store/StoreLayouts/Item\\_Detail.aspx?iProductCode=C811&Category=BOOK](https://www.ciria.org/ci/iCore/Store/StoreLayouts/Item_Detail.aspx?iProductCode=C811&Category=BOOK) (Accessed March 2026)

101 CIRIA (2015) The SuDS Manual (C753). Available online at: [https://www.susdrain.org/resources/SuDS\\_Manual.html](https://www.susdrain.org/resources/SuDS_Manual.html) (Accessed March 2026)

102 CIRIA (2019) Culvert, screen and outfall manual (C786F). Available online at: [https://www.ciria.org/CIRIA/Books/Free\\_publications/C786F.aspx](https://www.ciria.org/CIRIA/Books/Free_publications/C786F.aspx) (Accessed March 2026).

103 EA (2025). Guidance: Apply for a water abstraction or impounding licence. Available online at: <https://www.gov.uk/guidance/water-management-apply-for-a-water-abstraction-or-impoundment-licence> (Accessed March 2026)

104 EA (2024). EA Guidance: Discharges to surface water and groundwater: environment permits. Available online at: <https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits> (Accessed March 2026)

105 EA (2023). Guidance: Oil storage regulations for businesses. Available online at: <https://www.gov.uk/guidance/storing-oil-at-a-home-or-business> (Accessed March 2026)

106 EA (2025). Guidance: Flood risk activities: environmental permits. Available online at: <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits> (Accessed March 2026)

107 EA (2024). Guidance: Manage water on land: guidance for land managers. Available online at: <https://www.gov.uk/guidance/manage-water-on-land-guidance-for-land-managers> (Accessed March 2026)

108 The British Standards Institute (BSI) (2009) BS 6031:2009 Code of practice for earthworks. Available online at: <https://knowledge.bsigroup.com/products/code-of-practice-for-earthworks> (Accessed March 2026)

109 Highways England (2020). LA 113. Road drainage and the water environment. Revision 1. Available online at: <https://www.standardsforhighways.co.uk/tse/attachments/by-attachment-id/02e8dce4-f853-4f27-8ea4-a83c57343c12?inline=true> (Accessed March 2026)

110 Department for Environment, Food & Rural Affairs (2025). Guidance: National standards for sustainable drainage systems (SuDS). Available at: <https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds> (Accessed March 2026)

111 Westmorland and Furness Council (n.d) Apply for consent for works on ordinary watercourses. Available online at: <https://www.westmorlandandfurness.gov.uk/planning-and-building-control/environment-and-planning/flooding-management-and-prevention/apply-consent-works-ordinary-watercourses> (Accessed March 2026)

## 8.3 Approach To Consultation

Initial consultation will be undertaken through this Scoping Report and as set out in **Section 8.10**. Further consultation may be required throughout the assessment as the design progresses and upon receipt of the Scoping Opinion. All consultation will be documented in the Hydrology ES chapter.

## 8.4 Study Area

There is no set guidance for defining hydrological study areas for ESs in the UK. As such, the hydrological Study Area of the Proposed Development has been defined based on professional judgment and experience on projects of a similar nature and scale.

The Study Area is defined as a 1 km buffer from the Site. Impacts to all hydrological receptors within the Study Area and that are hydrologically connected to the Site and will be assessed. The Study Area is shown in **Figure 8.1**.

## 8.5 Baseline Conditions and Key Sensitivities

The following section sets out the baseline hydrology conditions of the Study Area. Please refer to **Section 2.3** of this Scoping Report for details on general Site context.

### 8.5.1 Surface Water Hydrology

The Study Area is situated within the North West WFD River Basin district<sup>112</sup>. Within this district, the Study Area is spread across two WFD surface water management catchments<sup>113</sup>: the Kent and Leven catchment which underlies a large majority of the Study Area, and the Lune catchment in a small section in the northeast and east of the Study Area. The WFD surface water management catchments and surface water hydrology are shown in **Figure 8.2**.

Ordnance Survey (OS) mapping shows there are numerous surface watercourses within the Study Area. There are no EA 'Main' rivers within the Study Area or Site. There is one WFD watercourse<sup>114</sup> within the Study Area, the Stainton Beck (Saint Sunday's Beck on OS mapping), which flows southwest from Lambrigg Fell flowing parallel and approximately 300 m west of the Site boundary. It has an ecological WFD

112 EA (2025) WFD River Basin Districts Cycle 2. Available online at: <https://www.data.gov.uk/dataset/368ae5fb-65a1-4f19-98ff-a06a1b86b3fe/wfd-river-basin-districts-cycle-2> (Accessed March 2026)

113 EA (2025) WFD Surface Water Management Catchments Cycle 2. Available online at: <https://www.data.gov.uk/dataset/1a494e3e-e414-456c-9c2e-ca367a2945b6/wfd-surface-water-management-catchments-cycle-2> (Accessed March 2026)

114 EA (2026) Water Framework Directive (WFD) River, Canal, and Surface Water Transfer Water Bodies Cycle 3 Classification 2019 (Full Resolution). Available online at: <https://environment.data.gov.uk/dataset/925db33a-3b21-410e-b2a7-1246a6d2a755> (Accessed March 2026)

classification of good. The Stainton Beck does not, however, enter the Site. Based on the current desktop data the hydrological connectivity between the on-site tributaries of the Stainton Beck and the WFD watercourse are unclear.

There are eight other 'ordinary' watercourses which flow in all directions from the Lambrigg Fell hill. Two flow southeast from the hill through the Site as the Sparishaw Beck eventually discharging into the Killington Reservoir 300 m south of the Study Area. The Lambrigg Beck in the northeast of the Site with multiple tributaries that flow northeast away from Lambrigg Fell hill. There are numerous ponds and lakes within the Study Area, as well as an unnamed reservoir 400 m west of the Site.

## 8.5.2 Water Resources

### 8.5.2.1 Private Water Supplies

The locations of any Private Water Supplies (PWS) within the Study Area are currently unknown. Westmorland and Furness Council will be contacted as part of the ES to discover the location of any known PWS within the Study Area.

### 8.5.2.2 Licenced Abstractions and Discharge Consents

The locations of EA licenced abstractions and EA licenced discharges within the Study Area are currently unknown. The EA will be contacted as part of the ES to discover the location of any known abstractions and discharges.

### 8.5.2.3 Public Water Supplies

It is not known at this stage if there are any public water supplies / assets within the Study Area. United Utilities will be contacted as part of the ES to confirm the location of any public water assets.

### 8.5.2.4 Drinking Water Protected Areas

There are no EA designated drinking water protected areas or drinking water safeguard zones within the Study Area<sup>115</sup>.

### 8.5.2.5 Source Protection Zones

There are no EA designated groundwater source protection zones within the Study Area<sup>116</sup>.

115 EA (2026) Drinking Water Protected Areas (Surface Water). Available online at: <https://www.data.gov.uk/dataset/3d136e9a-78cf-4452-824d-39d715ba5b69/drinking-water-protected-areas-surface-water> (Accessed March 2026)

116 EA (2025) Source Protection Zones [Merged]. Available online at: <https://www.data.gov.uk/dataset/09889a48-0439-4bbe-8f2a-87bba26fbbf5/source-protection-zones-merged1> (Accessed March 2026)

## 8.5.3 Flood Risk

### 8.5.3.1 Rivers and Sea

The EA Flood Map for planning<sup>117</sup> shows that the Study Area falls within Flood Zone 3, meaning there is a more than 1% annual exceedance probability (AEP) of flooding each year. The Study Area also falls within Flood Zone 2 which has a 0.1% to 1% AEP. However, these flood zones are only associated with the Lambrigg Beck in the north of the Study Area, approximately 700 m north of the Site, and the extents are limited to the primary corridor of the watercourse. The Site itself is not indicated to be at risk of flooding on the EA Flood Map. The river flood zones are shown in **Figure 8.3**.

### 8.5.3.2 Surface Water

The EA Surface water map<sup>118</sup> shows that the Site and Study Area are at risk of surface water flooding. The risk of flooding varies between a high chance (more than a 3.3% chance each year), medium chance (between 1% to 3.3% chance each year), and low chance (between 0.1% to 1% chance each year). In some cases, the flood extents correlate with ordinary watercourses and surface waterbodies (ponds, lakes and reservoirs). An extensive area of surface water flooding is shown around the Lambrigg Beck in the northeast of the Site. The extents of the flooding spill out onto fields on the left and right bank of the watercourse. There is also an area of surface water flooding in the southeast of the Site around an unnamed watercourse which is adjacent to the M6 road. Surface water flooding extents spill out onto the fields to the west.

The risk of flooding from surface water is shown in **Figure 8.4**.

### 8.5.3.3 Coastal

The Study Area is located 20 km from the coast and is not, therefore, at risk of flooding from the sea.

### 8.5.3.4 Reservoirs

The EA reservoir flood maps<sup>119</sup> show there is no risk of flooding from reservoirs on both wet and dry day scenarios within the Study Area.

117 EA (2025) Flood Map for Planning. Available online at: <https://flood-map-for-planning.service.gov.uk/map?cz=414906.5,434895.7,8.44> (Accessed March 2026)

118 EA. Surface water map. Available online at: <https://check-long-term-flood-risk.service.gov.uk/map#> (Access March 2026).

119 EA (2025) Reservoir flood map. Available online at: <https://check-long-term-flood-risk.service.gov.uk/map> (Accessed March 2026)

### 8.5.4 Designated Sites

A review of Natural England maps<sup>120</sup> show there are no Sites of Special Scientific Interest (SSSI), Ramsar sites, Special Protection Areas (SPA), or Special Areas of Conservation (SAC) within the Study Area.

## 8.6 Proposed Assessment Methodology

### 8.6.1 Desk Study

An initial desk-based study has been conducted to inform the baseline section of this chapter (**Section 8.5**) using various opensource datasets including OS maps and EA datasets. The baseline conditions will be expanded on in the ES and utilise aerial imagery, digital terrain models, and any additional data collected from consultees such as PWS and public water asset data. Any existing or proposed watercourse crossings which will be used or constructed as part of the Proposed Development will also be identified within the ES.

### 8.6.2 Field Study

A hydrological site survey will be undertaken later in the design process as a targeted survey focusing on the areas of the Site proposed for development, and in particular watercourse crossing locations. As such, the survey will cover the following:

- ground-truth the desk-based study;
- identify any additional hydrological features;
- understand the local topography and drainage patterns of the Site; and
- characterise watercourses at proposed crossing locations.

The results of the site survey will be used to inform the baseline and assessment of effects within the hydrology chapter.

### 8.6.3 Assessment and Reporting

The assessment methodology for the hydrology ES chapter will follow the methodology and approach detailed in **Section 3.3**.

The hydrology impact assessment will be based on technical understanding, professional judgement, and experience on similar schemes. The approach will be based on a source-pathway-receptor (SPR) methodology i.e. considering the

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<sup>120</sup> MAGIC (n.d.) Magic Map. Available online at: <https://magic.defra.gov.uk/MagicMap.html> (Accessed March 2026)

hydrological connectivity between construction works and the receiving water environment.

Once the baseline environment has been described and the hydrological receptors of interest identified, the sensitivity of each receptor will be defined. The determination of the significance of effects will be based on combining the receptor sensitivity and the magnitude of change (impact). The magnitude of change will consider the scale, duration, and extent of an impact.

Supporting technical appendices to the main chapter will be produced where relevant.

#### 8.6.4 Cumulative Effects

Cumulative effects on hydrology can occur when multiple developments progress in combination with each other within the same hydrological catchment, or when there is a combined impact of individual effects from the same development within the same hydrological catchment. Effects are most likely when the construction phase of the Proposed Development and other developments coincide.

Hydrological catchments for the Site will be derived using opensource digital terrain model (DTM) data, and a cumulative assessment completed for developments located within the same hydrological catchment as the Proposed Development.

## 8.7 Potential Significant Impacts and Effects

The following effects on hydrology have the potential to occur during construction and operation of the Proposed Development and shall be considered in the ES:

- Impacts to surface water quality because of chemical pollution from mobilisation of pollutants through surface water runoff, and / or from accidental spills and leaks;
- Impacts to surface water quality and watercourse geomorphology because of erosion and sedimentation associated with excavations and stockpiling;
- Impacts to surface water quality, quantity, watercourse geomorphology, and flood risk because of watercourse crossings for access tracks;
- Increases in run-off and offsite flood risk due to greater areas of hardstanding and soil compaction;
- Flood risk to works during construction; and
- Impacts to water resources (private water supplies, public water supplies, abstractions etc.) because of changes to water quality and / or quantity and / or direct strikes to supply lines.

## 8.8 Mitigation

During the evolution of the design the hydrological receptors identified in this chapter have been, and will continue to be, taken into consideration. The hydrology ES chapter will summarise this ‘mitigation by design’ which includes siting infrastructure outside flood risk areas, watercourse buffers, and water resources catchments or assets.

The design of the Proposed Development will seek to avoid and / or reduce the number of watercourse crossings needed. Where new watercourse crossings are required, there will be a commitment in the ES that all watercourse crossings will be designed in accordance with the appropriate industry standards, EA, and lead local flood authority (LLFA) guidelines, and all crossings will be designed to accommodate the 1 in 100 year plus climate change flows. Additionally, as all watercourses within the Site are ordinary watercourses, any crossing construction will be subject to ordinary watercourse consent from Westmorland and Furness Council<sup>111</sup>.

There will also be a commitment in the ES that final detailed design of the Proposed Development will also incorporate a sustainable drainage system (SuDS) which will control runoff rates from the Site to greenfield rates such that there is not an increase in flood risk. The SuDS will be designed in line with good practice guidelines such as the CIRIA SuDS Manual<sup>101</sup> and any relevant guidelines from the LLFA.

During construction there is a commitment to implement a construction environmental management plan (CEMP) for the Proposed Development. The hydrology ES chapter will provide details of the type of mitigation specifically needed in relation to hydrology, and which will form part of the final CEMP. The CEMP will also be in line with all the legislation, policy, and guidance set out in **Section 8.2**.

## 8.9 Proposed Scope of EIA/ES Chapter

**Table 8.1** summarises the proposed scope of the hydrology ES chapter.

Table 8.1: Hydrological Factors to be Scoped In or Out of the Assessment

| Environmental Receptor, Assessment, Or Effect       | Scoped In / Out | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surface Water Hydrology                             | Scoped In       | Watercourses and waterbodies within the Site have the potential to be impacted by the Proposed Development as a result of changes to water quality, quantity, and watercourse crossings.                                                                                                                                                                                                                                                                    |
| Water Framework Directive (WFD) Assessment          | Scoped Out      | There are no WFD watercourses or waterbodies within the Site which could be directly impacted. Hydrological catchment analysis will be completed as part of the ES but based on current understanding of the hydrology of the Site, the current Proposed Development is not considered hydrologically connected to the Stainton Beck. As such no WFD assessment is required.                                                                                |
| Water Resources (private and public water supplies) | Scoped In       | The full extent of water resources within the Study Area is unknown at the time of writing e.g. if there are any private or public water supplies. The EA, Westmorland and Furness Council, and United Utilities will be contacted as part of the ES to inform an updated baseline. Therefore, water resources are scoped in but the need for further assessment will be based on the results of the data gathering.                                        |
| Standalone Flood Risk Assessment (FRA)              | Scoped Out      | As the Site is not within Flood Zone 2 and 3, the mitigation / design process will locate all infrastructure outside of the surface water flood extents, and there will be SuDS in place during operation to control runoff and thus prevent an increase in flood risk, there is not considered the need for a standalone FRA. Instead flood risk and the mitigation needed in relation to flood risk will be covered within the main hydrology ES chapter. |
| Designated Sites                                    | Scoped Out      | There are no designated sites within the Study Area as such these are scoped out of further assessment.                                                                                                                                                                                                                                                                                                                                                     |

## 8.10 Consultation and Scoping Questions

During the next phase of the ES, details of water resources (licenced abstractions and discharge consents, public and private water supplies) will be obtained through consultation with the:

- Environment Agency;
- Westmorland and Furness Council; and
- United Utilities.

As part of this Scoping Report, key questions for consultees are:

- Q 8.1 – Are consultees content with the proposed methodology and scope of the assessment of hydrology?
- Q 8.2 – Do consultees have any information that would be useful in the preparation of the hydrology assessment?
- Q 8.3 – In the absence of English specific guidance, can the *Scottish Environmental Protection Agency (SEPA) Guidance on Assessing the Impacts to Groundwater Abstractions*<sup>121</sup> be used for the assessment of public and private water supplies?

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<sup>121</sup> SEPA (2024). Guidance on Assessing the Impacts to Groundwater Abstractions. Available at: <https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fmfzpnjwb%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-abstractions.docx&wdOrigin=BROWSELINK> (Accessed July 2026)

# 9. Geology and Peat

## 9.1 Introduction

This chapter of the EIA Scoping Report outlines the baseline environment, potential impacts and the proposed methodology to be undertaken for the geological environment (geology, peat, soils and hydrogeology) as a result of the Proposed Development.

This chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2** and with reference to relevant parts of other technical chapters such as **Chapter 6** and **Chapter 8**.

The Geology and Peat Scoping Chapter is supported by the following figures:

- **Figure 9.1:** Interpolated Peat Depths
- **Figure 9.2:** Groundwater Bodies
- **Figure 9.3:** Hydrogeology

For the purposes of scoping, the 'Study Area' for the Geology and Peat assessment refers to the areas within the red line boundary displayed on **Figure 9.1**.

## 9.2 Legislation, Policy and Guidance

The following legislation, policy and guidance was reviewed in the preparation of this chapter and will be used throughout the geology and peat assessment. This includes legislation relevant to geology, peat and soil environments in the UK, as well as good practice guidance that will be used to inform the ES.

### 9.2.1 Legislation

- Environmental Protection Act 1990<sup>122</sup>; and
- Waste (England and Wales) Regulations 2011<sup>123</sup>.

122 Environmental Protection Act 1990. (1990) Available online at: <https://www.legislation.gov.uk/ukpga/1990/43/contents> (Accessed July 2026)

123 The Waste (England and Wales) Regulations 2011. (2011) UK Statutory Instrument No. 988. Available online at: <https://www.legislation.gov.uk/uksi/2011/988/contents> (Accessed August 2026)

## 9.2.2 National Planning Policy

### 9.2.2.1 National Policy Statements

The energy National Policy Statements (NPSs), EN-1 – EN-6, outline the government's policy for delivering major energy infrastructure. The NPSs that are of relevance to the Proposed Development are:

- Overarching National Policy Statement for Energy (EN 1) (2025);
- National Policy Statement for Renewable Energy Infrastructure (EN 3) (2025); and
- National Policy Statement for Electricity Networks Infrastructure (EN-5) (2025).

Details of specific policies within EN-1, EN-3 and EN-5 that are considered relevant to peat and geology are set out in **Table 9.1**. EN-5 contains no additional requirements with regard to peat and geology.

**Table 9.1: Policies within EN-1, EN-3 and EN-5 relevant to peat and geology**

| NPS Reference           | NPS Requirements                                                                                                                                                                                                                                                                                            |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN-1, paragraph 5.4.18  | "Where the development is subject to EIA the applicant should ensure that the ES clearly sets out any effects on internationally, nationally, and locally designated sites of ecological or geological conservation importance (including those outside England)."                                          |
| EN-1, paragraph 5.4.20  | "The applicant should show how the project has taken advantage of opportunities to                                                                                                                                                                                                                          |
| EN-1, paragraph 5.11.19 | "Applicants should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommissioning has taken place."                                                                                                  |
| EN-3 paragraph 2.12.77  | "Onshore wind farm sites within England may be proposed on peatland, however applicants should rule out other locations before siting developments on peatland. In particular, areas of deep peat, which have the highest potential for carbon emissions, should be avoided."                               |
| EN-3 paragraph 2.12.78  | "Where developments are proposed on peatlands, including on deep peat, applicants must conduct a detailed peat survey and must provide justification of the need for infrastructure to be sited on peatland. A geotechnical survey to assess the risk of landslide may also be required where appropriate." |
| EN-3 paragraph 2.12.12  | "Applicants must undertake avoidance, management, mitigation or compensatory measures for impact on peatland habitats. For example, restoring disturbed peatland habitats                                                                                                                                   |

| NPS Reference           | NPS Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN-3 paragraph 2.12.151 | <p>and carrying out additional nature restoration on or off-site.”</p> <p>“Where developments are proposed on peatland, the Secretary of State must be satisfied that the onshore wind farm layout and construction methods have been designed to minimise soil disturbance and other peatland impacts during construction and maintenance of roads, tracks, and other infrastructure. The Secretary of State should be satisfied that areas of deep peat within a site have been avoided through development design.”</p> |

### 9.2.2.2 National Planning Policy Framework (NPPF) (2026)<sup>124</sup>

The following NPPF paragraphs are relevant to geology, hydrogeology and ground conditions assessment:

#### ***“P2: Ground conditions***

*1. Sites proposed for development should be suitable for their proposed use taking into account:*

- a. Ground conditions, including any risks arising from land instability or contamination (whether due to natural hazards or current and former activities such as mining or fuel storage); and,*
- b. The extent to which any such risks can be mitigated, and the potential impacts on the natural environment arising from remediation.*

*2. Where land is remediated it should, as a minimum, not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990.*

*3. Adequate site assessment information, prepared by a competent person, should be available to inform these considerations.*

*4. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.*

#### ***N6: Areas of particular importance for biodiversity and geodiversity***

<sup>124</sup> Ministry of Housing, Communities & Local Government. (MHCLG) (2026) National Planning Policy Framework (NPPF). Available online at: [https://www.gov.uk/government/publications/national-planning-policy-frameworkNational\\_Planning\\_Policy\\_Framework.pdf](https://www.gov.uk/government/publications/national-planning-policy-frameworkNational_Planning_Policy_Framework.pdf) (Accessed July 2026)

1. To support the conservation of important habitats, species and sites of geodiversity value, development proposals affecting:

a. A site of international importance, which for the purpose of this policy is a habitats site, should be refused unless:

- i. An appropriate assessment has concluded that the proposal will not adversely affect the integrity of the site (either individually or in combination with other developments), or the proposal can satisfy the derogation tests<sup>125</sup>; and/or
- ii. The impact of development on the relevant protected features of the protected site is being addressed through an Environmental Delivery Plan which has been made and the developer has committed to paying the nature restoration levy.

b. A site of national importance, which for the purpose of this policy is one designated as a Site of Special Scientific Interest, should only be supported if:

- i. There would be no adverse effect (either individually or in combination with other developments) on the site's features of special scientific interest; or
- ii. The benefits of the development in the location proposed clearly outweigh both the likely impact on the features of special scientific interest, and any broader impact on the national network of Sites of Special Scientific Interest; or
- iii. The impact of development on the relevant protected feature of the protected site is being addressed through an Environmental Delivery Plan which has been made and the developer has committed to paying the nature restoration levy.

c. A site of local importance, which for the purpose of this policy is one designated as a Local Nature Reserve or identified as a local wildlife site, local geological site or equivalent in the development plan, should only be supported if:

- i. There would not be a significant adverse effect on the integrity of the site; or

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<sup>125</sup> "These being that there are no feasible alternative solutions to the proposal which are less damaging, there are imperative reasons of overriding public interest for it to proceed, and compensatory measures are secured to ensure that the overall coherence of the network of habitats sites is maintained".

*ii. The benefits of development in the location proposed clearly outweigh the likely impact on the features which make the site valuable for nature conservation.*

*2. Irrespective of a site's status in nature conservation terms, development proposals which would entail the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons<sup>126</sup> and a suitable compensation strategy exists.*

*3. This policy applies to development on land inside or outside a designated area, if it would have an impact on the identified biodiversity or geodiversity value of the area concerned."*

## **CC2: Mitigation of climate change**

*1. In order to contribute to climate change mitigation and the transition to net zero, development proposals should, where relevant to the proposal:*

*[...] d. Take advantage of opportunities to reuse existing structures and materials, including by reusing non-contaminated excavated soil and hardcore within the site; [...]*

*[...] f. Contribute to the creation or restoration of habitats which can act as carbon stores, such as through woodland planting and peatland restoration, while avoiding harm to habitats which can act as important carbon stores, including peatland and salt marsh; [...]"*

### **9.2.2.3 Local Planning Policy**

Local planning policy relevant to Geology and Peat matters will be identified and drawn from the South Lakeland Local Plan<sup>127</sup>. Key policies include:

- Core Strategy Policy CS8.4 Biodiversity and Geodiversity);
- Policy CS8.8 (Development and Flood Risk);
- DM1 Development Management Policies (General Requirements for All Development); and,
- DM7 (Pollution, Contamination and Water Quality).

These plans collectively seek to protect geological resources and ensure environmental effects are appropriately avoided, minimised or mitigated.

<sup>126</sup> "For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of the relevant habitats".

<sup>127</sup> Westmorland and Furness Council (n.d.) South Lakeland Local Plan. Available at: <https://www.westmorlandandfurness.gov.uk/planning-and-building-control/planning/planning-policy/legacy-local-plans/south-lakeland-local-plan> (Accessed August 2026).

### 9.2.2.4 Guidance

- Cumbria Local Nature Recovery Strategy (LNRS) (Westmorland and Furness Council, 2025)<sup>128</sup>;
- Environment Agency (2020) Land Contamination Risk Management<sup>129</sup>;
- Department for Food, Environment and Rural Affairs (DEFRA) (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites<sup>130</sup>;
- Institute of Sustainability and Environmental Professionals (ISEP) (2022) IEMA Guide: A New Perspective on Land and Soil in Environmental Impact Assessment<sup>131</sup>;
- British Standards Institution (BSI). BS 5930:2015+A1:2020 Code of practice for ground investigations (2020)<sup>132</sup>;
- CIRIA Report C811 (2023) Environmental Good Practice Onsite (5th Ed)<sup>133</sup>;
- HM Government (2023) Environmental Improvement Plan 2023. Department for Environment, Food & Rural Affairs<sup>134</sup>;
- Forestry Commission, Forest Research and Natural England (2022) Decision Support Framework for Peatland Protection, the Establishment of New Woodland and Re-establishment of Existing Woodland on Peatland in England<sup>135</sup>;
- Natural England (2025) England Peat Map (NERR149): Final Report. Natural England Research Report NERR149<sup>136</sup> ; and,
- Natural England (2025) Peat Probe Guidance<sup>137</sup>.

128 Westmorland and Furness Council (2025) Cumbria Local Nature Recovery Strategy. Available at: <https://cumbrialnrs.org.uk/> (Accessed August 2026).

129 Environment Agency. (2020) Land Contamination Risk Management (LCRM). Available online at: <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm> (Accessed August 2026).

130 Department for Environment, Food and Rural Affairs (Defra) (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. Available online at: <https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites> (Accessed August 2026)

131 Institute of Environmental Management & Assessment (IEMA). (2022) A New Perspective on Land and Soil in Environmental Impact Assessment. Available online at: <https://www.iema.net/resources> (Accessed August 2026)

132 British Standards Institution (BSI). (2020) BS 5930:2015+A1:2020 Code of practice for ground investigations. Available online at: <https://knowledge.bsigroup.com> (Accessed August 2026)

133 CIRIA. (2023) C811: Environmental Good Practice Onsite (5th Edition). London: CIRIA. Available online at: <https://www.ciria.org> (Accessed August 2026)

134 HM Government. (2023) Environmental Improvement Plan 2023. Department for Environment, Food & Rural Affairs. Available online at: <https://www.gov.uk/government/publications/environmental-improvement-plan> (Accessed August 2026)

135 Forestry Commission, Forest Research and Natural England. (2022) Decision Support Framework for Peatland Protection, the Establishment of New Woodland and Re establishment of Existing Woodland on Peatland in England. Updated July 2023. Available online at: <https://www.gov.uk/government/publications/decision-support-framework-for-peatland-protection-the-establishment-of-new-woodland-and-re-establishment-of-existing-woodland-on-peatland-in-england> (Accessed August 2026)

136 Natural England. (2025) England Peat Map (NERR149): Final Report. Natural England Research Report NERR149. Available online at: <https://publications.naturalengland.org.uk/publication/5075614867128320> (Accessed August 2026)

137 Natural England (2025) England Peat Map: Peat Probe Guidance [Online] Available online at: <https://publications.naturalengland.org.uk/publication/5075614867128320> (Accessed August 2026)

In lieu of English Guidance:

- Scottish Government (2017) Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Second Edition)<sup>138</sup>;
- NatureScot (2019) Guidance – Good Practice During Wind Farm Construction. 4th Edition<sup>139</sup>;
- Scottish Environment Protection Agency (2012). Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and Minimisation of Waste<sup>140</sup>; and,
- Scottish Government's (2017), Guidance on Developments on Peatland: Peatland Survey<sup>141</sup>.

## 9.3 Baseline Conditions and Key Sensitivities

This section sets out the baseline of ground conditions across the Study Area. The current baseline provides details on the topography, current and historical land use, geology, hydrogeology, peat and soils, contaminated land, unexploded ordnance (UXO) risk, and mining.

### 9.3.1 Data Sources

The following data sources have been reviewed as part of the scoping process:

- ESRI World Topographic Mapping<sup>142</sup>;
- Google Earth<sup>143</sup>;
- National Library of Scotland<sup>144</sup>;
- The British Geological Survey (BGS) GeoIndex Superficial Soils Map<sup>145</sup>;

138 Scottish Government. (2017) Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Second Edition). Available online at: <https://www.gov.scot/publications/peat-landslide-hazard-and-risk-assessments-best-practice-guide> (Accessed August 2026).

139 NatureScot. (2019) Guidance: Good Practice During Wind Farm Construction (4th Edition). Available online at: <https://www.nature.scot/doc/guidance-good-practice-during-wind-farm-construction> (Accessed August 2026).

140 Scottish Environment Protection Agency (SEPA). (2012) Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and Minimisation of Waste. Available online at: <https://www.gov.scot/publications/assessment-of-peat-volumes-reuse-of-excavated-peat-and-minimisation-of-waste-guidance> (Accessed August 2026).

141 Scottish Government, Scottish Natural Heritage and SEPA (2017) Guidance on Developments on Peatland: Peatland Survey. Online guidance. Available online at: <https://www.gov.scot/publications/peatland-survey-guidance-2017/> (Accessed August 2026).

142 ESRI (2025) World Topographic Map [Online] Available at: <https://www.arcgis.com/home/item.html?id=30e5fe3149c34df1ba922e6f5bbf808f%2F#overview> (Accessed August 2026)

143 Google (2025) Google Earth Historical Imagery [Online] Available at: [https://www.google.co.uk/intl/en\\_uk/earth/index.html](https://www.google.co.uk/intl/en_uk/earth/index.html) (Accessed August 2026)

144 National Library of Scotland (2025) Imaged Map [Online] Available at: <https://maps.nls.uk/geo/explore/side-by-side/> (Accessed August 2026)

145 British Geological Society (2023) Superficial Soils Map [online] Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html> (Accessed August 2026)

- The BGS GeoIndex Bedrock Geology Map<sup>146</sup>;
- The BGS GeoIndex Mines and Quarries Map<sup>147</sup>;
- Soilscales England and Wales Map<sup>148</sup>;
- England Peat Map<sup>149</sup>;
- Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map<sup>150</sup>;
- The Coal Authority Interactive Map Viewer<sup>151</sup>;
- A Zetica Unexploded Ordnance (UXO) Risk Map<sup>152</sup>;
- The Environment Agency Catchment Data Explorer interactive map<sup>153</sup>;
- Catchment Based Approach Data Hub – Environment Agency Water Abstraction Licences online mapping<sup>154</sup>.

### 9.3.2 Topography

The ESRI World Topographic Map indicates the Study Area is situated on elevations ranging from 210 m AOD to 340 m AOD. The highest point within the Study Area is recorded as Lambrigg Fell (340 m AOD) located in the western part of the Study Area. Terrain across the Study Area slopes gently eastwards from the summit of Lambrigg Fell and is generally characterised by undulating ground with no significant steep slopes.

### 9.3.3 Superficial Soils

The BGS GeoIndex shows the following superficial soils to be underlying the Study Area:

- Peat: Peat is recorded in isolated occurrences across the Study Area with concentrations generally in the southern half of the Site;

146 British Geological Society (2023) Bedrock Geology Map [online] Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html> (Accessed August 2026)

147 British Geological Society (2023) Mines and Quarries Map [online] Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html> (Accessed August 2026)

148 LandIS Soilscape (2025) Map Viewer [online] Available at: <https://www.landis.org.uk/soilscales/> (Accessed August 2026)

149 Natural England (2025) England Peat Map [Online] Available at: <https://englandpeatmap-defra.hub.arcgis.com/> (Accessed August 2026)

150 DEFRA (2025) Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map [Online] Available at: <https://magic.defra.gov.uk/> (Accessed August 2026)

151 The Coal Authority (2023) Interactive Map Viewer [online] Available at: <https://mapapps2.bgs.ac.uk/coalauthority/home.html> (Accessed August 2026)

152 Zetica UXO (2023) UXO Risk Map [Online] Available at: <https://zeticauxo.com/guidance/risk-maps/> (Accessed August 2026)

153 Environment Agency, Catchment Data Explorer interactive map viewer. Available online at: <https://environment.data.gov.uk/catchment-planning/> (Accessed August 2026)

154 Catchment Based Approach Data Hub – Environment Agency Water Abstraction Licences (December 2023). Available online at: <https://data.catchmentbasedapproach.org/datasets/environment::environment-agency-water-abstraction-licences/explore> (Accessed August 2026)

- Glacial deposits: Devensian Till - Present widely across the Study Area, with a higher concentration in the central and eastern areas;
- Alluvial Fan deposits: Comprising sand and gravel, present in the northern extent of the Study Area; and
- Soil deposits: An absence of recorded superficial soil deposits across the western and northern sections of the Study Area, indicating the presence of bedrock at or near surface level.

### 9.3.4 Bedrock Geology

The BGS GeoIndex shows the following bedrock geology to be underlying the Study Area:

- Kirby Moore Formation- Sandstone, this rock formation underlies the entirety of the Study Area with two faults aligned northeast to the southwest running through the Study Area.

### 9.3.5 Hydrogeology

The Environment Agency's Catchment Data Explorer interactive mapping<sup>155</sup> indicates that the Site is located within the South Cumbria Lower Palaeozoic and Carboniferous Aquifers groundwater body, which is classified under the Water Framework Directive (WFD) as having an overall status of 'good' (2019 classification). In the far northeast, the Study Area extends into the Lune and Wyre Carboniferous Aquifer groundwater body area, which also has an overall status of 'good' (2019 classification) under the WFD. Groundwater bodies in the Study Area are shown in **Figure 9.2**.

Based on available online 'MAGIC' mapping<sup>156</sup>, the Glacial Till superficial deposits, where present, are classified as a Secondary (Undifferentiated) Aquifer, defined by the Environment Agency as 'aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value'. The bedrock is classified as a Secondary B Aquifer, defined as 'mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers. Furthermore, BGS Hydrogeology 1:625,000 scale mapping<sup>157</sup> indicates

155 Environment Agency, Catchment Data Explorer interactive map viewer. Available online at: <https://environment.data.gov.uk/catchment-planning/> (Accessed August 2026)

156 DEFRA (2025) Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map [Online] Available at: <https://magic.defra.gov.uk/> (Accessed August 2026)

157 BGS (n.d.) Geoindex Onshore – Hydrogeology 1:625,000 scale. Available online at: <https://mapapps2.bgs.ac.uk/geoindex/home.html> (Accessed March 2026)

that the bedrock aquifer is low productivity. Hydrogeology in the Study Area is shown in **Figure 9.3**.

No licensed groundwater abstractions are identified within the Study Area<sup>158</sup>, and the Study Area is not located in a groundwater Source Protection Zone (SPZ)<sup>159</sup>.

Information on groundwater-fed Private Water Supplies will be sought at ES stage.

### 9.3.6 Mines and Quarries

The BGS GeoIndex Mines and Quarries Map indicates that there are no active mines or quarries recorded within the Study Area.

BGS mapping records indicate a historical quarry, Lambrigg Park, located north of the Study Area, at BGR SD 59573 94960, it is recorded as a ceased mineral working site.

Roan Edge Quarry, active aggregate and gritstone quarry, is located directly south of the Study Area.

### 9.3.7 Soils Mapping

LandIS Soilsclapes England and Wales Mapping indicate the following soil types are found across the Study Area:

- Free draining slightly acidic loamy soils. This soil type is recorded in the northern and southern extent of the Study Area.
- Slowly permeable wet very acid upland soils with peaty surface. This soil type represents the dominant soil occurring extensively across the Study Area.

### 9.3.8 England Peat Mapping

The England Peat Map provides details on the extent and depth of peat soils, as well as any erosion and drainage features, produced by computer modelling.

The England Peat Map defines peaty soils as any soils with an organic content  $\geq 20\%$  and a thickness  $\geq 0.1$  m. Deep peat is classed as any peaty soils that are  $> 0.4$  m in depth. Peaty Soil Depth mapping indicates peaty soils range from 0.1 - 1.6 m across the Study Area with deeper areas of peat in the central and southeastern sections of the Study Area.

The England Peat Map's erosion and drainage mapping identifies grips, hags, gullies and bare peat across the southwestern section of the Study Area.

158 Catchment Based Approach Data Hub – Environment Agency Water Abstraction Licences (December 2023). Available online at: <https://data.catchmentbasedapproach.org/datasets/environment::environment-agency-water-abstraction-licences/explore> (Accessed August 2026)

159 DEFRA (2025) Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map [Online] Available at: <https://magic.defra.gov.uk/> (Accessed August 2026)

### 9.3.9 Coal Mining

The Coal Authority Interactive Map Viewer shows that the Study Area is not within a coal mining reporting area.

### 9.3.10 Unexploded Ordinance (UXO)

The Zetica UXO Desk Study & Constraints Assessment does not identify any risk areas within the Study Area because of UXO derived from WWII bombings.

There is therefore no requirement for UXO precautions when surveying in this area, based on available information.

### 9.3.11 Contaminated Land

Given the remote location of the Site and its historical land use, the presence of contaminated land across the Site is considered unlikely. Made ground is present in the southwestern portion of the Study Area due to the construction and operational activities of the existing wind farm, however, contamination is not expected.

No current or historical landfill or designated waste sites have been identified within the Study Area, however Roan Edge Landfill Site is located directly south of the Study Area and is an active combined quarry, landfill and waste recycling facility.

### 9.3.12 Peat Survey and Investigations

Based on the potential presence of peat within the Study Area, a Phase 1 Peat Depth Survey was undertaken across the Study Area, following Natural England's Peat Probe Guidance<sup>160</sup>, which details probing techniques. The survey design was created in accordance with the Scottish Government's Guidance on Developments on Peatland which details good practice for peatland surveys (in the absence of an English equivalent) to inform the preliminary design of the infrastructure layout, with the infrastructure located away from area of peat, where achievable.

Details of additional survey requirements to inform subsequent assessment are provided in **Section 9.5.1**.

The initial Phase 1 Peat Depth Survey comprised probing on a 100 m x 100 m grid across the Study Area to allow for an initial assessment. Peat depths were recorded using a graduated peat probe, approximately 6 mm in diameter and capable of probing depths of up to 6.2 m. This was pushed vertically into the ground to refusal where depth and substrate were recorded to an accuracy level of 10 cm.

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<sup>160</sup> Natural England (2025) England Peat Map: Peat Probe Guidance [Online] Available at: <https://publications.naturalengland.org.uk/publication/5075614867128320> (Accessed August 2026)

The peat depth survey recorded thicknesses of peat from the surface to refusal, or extent of probe length, between 0.0 m and 2.3 m.

An interpolation of peat depth survey results is illustrated in **Figure 9.1**, while **Table 9.2** gives a summary of recorded peat depths across the Site.

**Table 9.2: Summary of Peat Depths**

| Peat Depth Range (m) | No. of Probes | Percentage (%) |
|----------------------|---------------|----------------|
| 0.0 – 0.1            | 126           | 69.6           |
| 0.101- 0.4           | 39            | 21.5           |
| 0.401 – 1.0          | 13            | 7.2            |
| 1.001 – 1.5          | 1             | <1             |
| 1.501 - 2.0          | 1             | < 1            |
| > 2.0                | 1             | < 1            |
| <b>Total</b>         | <b>181</b>    | <b>100*</b>    |

\*Percentage total may not total 100 due to rounding.

Of the 181 peat depths recorded during the Phase 1, 69.6 % of probes recorded depths of 0.1 m or less, which are considered non-peat under English guidance. A further 21.5 % of probes identified shallow peat deposits across the Site (less than 0.4 m), while the remaining 8.9 % indicated deeper peat deposits exceeding 0.4 m in depth.

#### 9.3.12.1 Peat Survey Limitations

No peat depth probing has been undertaken within the operational wind farm site to date due to access constraints at the time of the initial Phase 1 Survey.

## 9.4 Potential Significant Impacts and Effects

At this stage, the main key sensitivities:

- Soil type and associated land uses that are highly sensitive (e.g., peat/blanket bog); and
- Highly sensitive soils that have peat deposits (>0.4 m depths).

The following geology and peat impacts have the potential to result from the Proposed Development and shall be considered in the undertaking of further geology and peat assessment:

- Peat stability throughout construction, operation and decommissioning of the Proposed Development;
- Disturbance of Deep Peat during construction and decommissioning;
- Loss and compaction of peat and soils during construction and decommissioning;
- Peat as waste material during construction and decommissioning;
- Contaminated Land throughout construction, operation and decommissioning of the Proposed Development; and
- Cumulative effects on geology, soil and peat during construction and decommissioning.

## 9.5 Assessment Methodology

The Study Area for the Geology, Soils and Peat assessment will be the area within the red line boundary, as there are unlikely to be impacts on geology and peat outside this area. The Study Area is displayed on **Figure 9.1**.

The proposed methodology will be prepared in line with the guidance and standards presented in **Section 3** of this Report.

The purpose of the geology and peat assessment will be to:

- Define the peat extent, depth, and properties;
- Identify any areas susceptible to peat slide, using peat thickness and Digital Terrain Model (DTM) data to analyse slopes;
- Advise on the micro-siting of turbines and all other infrastructure to areas consisting of shallow or no peat;
- Assess potential impacts on geology and peat; and
- Develop an acceptable code for construction that will adopt good practice procedures, effective management, and control of on-site activities to reduce or offset any detrimental effects on the geology and peat.

### 9.5.1 Additional Peat Surveys

Peat probing will be undertaken in accordance with Scottish Government - Guidance on Developments on Peatland and Natural England - Peat Probing Guidance.

Peat Probing will consist of two phases:

- A preliminary phase (Phase 1) – consisting of a 100 m x 100 m grid across the Study Area (partially completed May 2026); and

- Undertaking targeted peat probing once the proposed infrastructure has been defined (Phase 2). This will focus on the layout of the Proposed Development following design freeze and will comprise probes at 50 m centres along proposed tracks with 10 - 25 m offsets either side to allow for micro-siting. Peat probing will also be undertaken over a 10 m x 10 m grid at each proposed turbine location and other proposed infrastructure such as substations, construction compounds and proposed borrow pits (where applicable).

## 9.6 Mitigation

Deep peat will be avoided during the design of the Proposed Development by siting infrastructure away from those areas, where practicable. Mitigation to prevent peat slides will be provided in a Peat Landslide Hazard Risk Assessment (PLHRA) and mitigation to manage the storing and handling of peat will be provided in an outline Peat Management Plan (oPMP). An outline Construction Environmental Management Plan (oCEMP) will also be prepared in advance of construction in line with good practice, detailing mitigation measurements relating to the management of peat.

An outline Habitat Management and Monitoring Plan (oHMMP) will be prepared to set out biodiversity enhancement and habitat improvement across the Site. The oHMMP will identify opportunities to use any surplus peat, generated during construction, for peatland restoration within the Site. Any peat not reused for infrastructure reinstatement or re-dressing works will be available for peatland restoration. The oHMMP will be appended to the Chapter 6: Ecology.

### 9.6.1 Peatland Landslide Hazard Risk Assessment

A PLHRA will be undertaken in accordance with the Scottish Government guidance 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Second Edition) where applicable, and full consultation with the relevant consultees will be undertaken as required.

The PLHRA will contain detailed analysis and reporting on the design freeze and will include a hazard and slope stability assessment and preliminary peat management recommendations.

Hazards on the Site will be ranked based on factors that influence stability, namely peat depth and slope gradient. In addition, potential receptors exposure to risk will be established and hazard rankings applied across the Site, with management and mitigation measures recommended for an acceptable construction.

### 9.6.2 Outline Peat Management Plan

An oPMP will accompany the ES which will include high-level estimation on peat excavation and re-use volumes. This will be based on the approximate infrastructure dimensions and anticipated re-use streams. The oPMP will:

- Define the materials that will be excavated as a result of the Proposed Development, focusing specifically on the excavation of peat;
- Determine volumes of excavated arisings, the cut / fill balance of the Proposed Development and proposals for re-use or reinstatement of excavated materials; and
- Detail management techniques for handling, storing and depositing peat for reinstatement.

## 9.7 Scope of EIA Chapter

**Table 9.3** presents the environmental factors relating to geology, soils and peat that are proposed to be scoped into or scoped out of the assessment and identifies the relevant phase(s) of the Proposed Development to which each factor applies, namely construction, operation and decommissioning.

Table 9.3: Geological Factors to be Scoped In or Out of the Assessment

| Environmental Receptor, Assessment or Effect | Scoped In/Out | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Peat Stability                               | Scoped In     | Peat instability is generally the result of a combination of causative factors. During the construction, operation and decommissioning phases, several project related activities have the potential to increase the likelihood of peat slides in areas where peat is present at sufficient depth and where ground gradients are sufficiently steep to give rise to a peat slide event.                                                                                                                |
| Disturbance of Deep Peat                     | Scoped In     | Where construction or decommissioning activities take place in areas underlain by peat, some disturbance of peat is likely to occur. The oPMP will identify areas of deep peat (defined as peat greater than 0.4 m in depth), and this information will be used to inform project design and construction methodology during both the construction and decommissioning phases, with the aim of minimising disturbance of deep peat as far as is reasonably practicable.                                |
| Loss and Compaction of Peat and Soils        | Scoped In     | The loss and compaction of peat and soils could occur where development takes place in areas underlain by peat during the construction and decommissioning phases. Even where direct impacts on peat are avoided, construction and decommissioning activities have the potential to result in soil compaction. This may reduce soil permeability and increase the risk of surface water run-off and erosion. These potential effects will be assessed and, where required, mitigated through the oPMP. |
| Peat as Waste Material                       | Scoped In     | Where peat is disturbed during the construction and decommissioning phases, it will be reused on Site as far as is reasonably practicable. Depending on the quantities of peat excavated, areas within the Proposed Development may be required for peatland restoration. The management, reuse and restoration of peat will be set out and addressed within the oPMP.                                                                                                                                 |
| Impact on Geology and Soils                  | Scoped In     | Earthworks, foundations, tracks and other infrastructure have the potential to affect geology and soils. These impacts will be assessed within the EIA, taking account of baseline conditions, construction activities and decommissioning, and guided by appropriate standards and professional judgement.                                                                                                                                                                                            |

| Environmental Receptor, Assessment or Effect | Scoped In/Out | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contaminated Land                            | Scoped Out    | Given the historical land use and remote setting of the Study Area, the presence of contaminated land during the construction and decommissioning phases of the Proposed Development is considered unlikely and is therefore scoped out of the EIA.                                                                                                                                                                                                                                                                                                                                                                                   |
| Cumulative effects on geology, soil and peat | Scoped Out    | Construction and decommissioning activities involving soil and peat excavation or handling represent the primary project activities with the potential to affect geology, soil and peat within the Study Area. Effects on geology, soil and peat are inherently localised, site specific, and confined to the footprint of the Proposed Development. As there are no pathways for interaction with effects arising from other developments, cumulative effects in relation to geology, soil and peat are scoped out. Consequently, nearby developments are not anticipated to influence geology, soils or peat within the Study Area. |
| Mining                                       | Scoped Out    | Given there are no coal mining reporting areas, active quarries or other mining within the Study Area mining is scoped out of the EIA.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| UXO Risk                                     | Scoped Out    | A preliminary UXO desk study assessment was undertaken prior to the Phase 1 peat survey and does not indicate any risk from UXO within the Study Area and therefore will be scoped out of the EIA.                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 9.8 Consultation and Scoping Questions

Consultation will be conducted with the following consultees:

- Westmorland and Furness Council;
- Natural England; and
- The Environment Agency;

Key questions for consultees are:

- Q9.1 - Do you agree that the data sources identified are sufficient to inform the Geology and Peat baseline for the EIA (and therefore that no further baseline data collection is merited)?
- Q9.2 - Have all Geology and Peat receptors and potential impacts that could result from the Proposed Development been identified?
- Q9.3 - Do you agree with the proposed approach to assessment for each of the impacts in **Section 9.4** and scoped in or out of the ES Report in **Section 9.7** for Geology and Peat?
- Q9.4 - Do you agree that the embedded mitigation measures described provide a suitable means for managing and mitigating the relevant potential effects of the Proposed Development on Geology and Peat receptors?
- Q9.5 - Do you have any information that will be useful in the preparation of the Geology and Peat assessment, such as information on local quarrying or infilled land?

# 10. Traffic and Transport

## 10.1 Introduction

This section of the Scoping Report describes the baseline traffic and transport conditions and the potential effects on the existing transport network and on sensitive receptors due to the construction, operation, and decommissioning phases of the Proposed Development. This assessment will also consider the traffic associated with the decommissioning of the 5 operational turbines associated with the existing Lambrigg Wind Farm. Vehicle movement to the Proposed Development will consist of abnormal load vehicles (ALVs), heavy goods vehicles (HGVs), light good vehicles (LGVs) and cars.

## 10.2 Legislation, Policy and Guidance

The assessment would be completed with reference to National Planning Policy Framework (NPPF) (2026)<sup>161</sup>, and relevant technical guidance (listed below) and in consultation with the Westmorland and Furness Council and National Highways:

- The Planning Practice Guidance on Travel Plans, Transport Assessment and Statements ((2014)<sup>162</sup>);
- Department for Transport (DfT) Circular 01/2022: The Strategic Road Network and the Delivery of Sustainable Development<sup>163</sup>;
- Cumbria Development Design Guide<sup>164</sup>; and
- Cumbria Transport Infrastructure Plan<sup>165</sup> (2022-2037).

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161 UK Government (2026) National Planning Policy Framework. Available online at:

[https://assets.publishing.service.gov.uk/media/67aafef8f3b41f783cca46251/NPPF\\_December\\_2024.pdf](https://assets.publishing.service.gov.uk/media/67aafef8f3b41f783cca46251/NPPF_December_2024.pdf) (Accessed March 2026)

162 UK Government (2014). Planning Practice Guidance on Travel Plans, Transport

Assessment and Statements. Available online at: <https://www.gov.uk/guidance/travel-plans-transport-assessments-and-statements> [Accessed on March 2026]

163 Department for Transport (2022). Strategic Road Network and the Delivery of Sustainable Development. Available Online At:

<https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development> [Accessed on 16/03/2026]

164 Cumbria Development Design Guide (2023) Available: <https://www.westmorlandandfurness.gov.uk/planning-and-building-control/environment-and-planning/flooding-management-and-prevention/cumbriadevelopment-design-guide> [Accessed March 2026]

165 Cumbria Transport Infrastructure Plan (2022) [Online] Available:

<https://cumbria.gov.uk/eLibrary/Content/Internet/544/38296/44603132558.pdf> [Accessed March 2026]

## 10.3 Baseline Conditions

### 10.3.1 Study Area

The Study Area for traffic and transport has been defined based on those roads that are expected to experience increased traffic flows associated with the decommissioning of the existing the existing turbines and the construction of the Proposed Development. The current geographic scope has been informed by a review of the other developments in the area, Ordnance Survey mapping, and consideration of the potential origins of construction staff and locations from which construction materials and equipment may be transported.

The road network currently anticipated to be included in the Study Area, is the M6 motorway and the A684, which provides access to the existing Lambrigg Wind Farm site and connects with Kendal located approximately 6 km to the west of the Proposed Development. There are no local amenities directly fronting the M6 motorway and the A684 in the vicinity of the Proposed Development.

The final Study Area and assessment scope will be confirmed as the Proposed Development progresses and through consultation with Westmorland and Furness Council and National Highways.

### 10.3.2 General Setting and Access

The Site of the Proposed Development is located approximately 6 km east of the town of Kendal and is bounded along its eastern edge by the M6 motorway. Access to the wider strategic road network is mainly available via the A684 which provides a connection to the M6 motorway.

It is proposed that access to the Proposed Development is via the existing access junction off the A684, which currently provides access to the operational Lambrigg Wind Farm development. This junction is well-established, benefits from good visibility in both directions, and successfully accommodated construction traffic associated with the operational Lambrigg Wind Farm. However, given the increased size of the turbine components associated with the Proposed Development, upgrade works may be required to ensure that the junction can safely accommodate abnormal load vehicles. The extent of any required works will be confirmed through the detailed access and swept path assessment.

The detailed construction traffic routing strategy is not yet confirmed, as suppliers have not been appointed. However, it is anticipated that all construction traffic (in particular HGVs and ALVs) will approach the site via the M6 motorway and exit

Junction 37 northbound, before continuing along the A684. Depending on the origin of construction traffic, vehicles may approach the Site from either the north or south via the M6 motorway.

The origins of general construction traffic are not currently known and are expected to be distributed across the wider region. Two potential quarry sites, Breedon Roan Edge Quarry (aggregates) and Holme Park Quarry (aggregates and concrete), have been identified as potential sources of construction materials. The final sources of materials and associated construction traffic routes will be confirmed as the Proposed Development progresses and following appointment of suppliers.

Breedon Roan Edge Quarry is located adjacent to the Proposed Development and is accessed directly from the A684. Holme Park Quarry would be accessed via the A6070 and A590, before joining the M6 northbound at Crooklands Interchange (Junction 36), with traffic subsequently approaching the Site via M6 Junction 37 and the A684.

**Figure 10.1:** Transport Plan maps the above information.

The proposed Port of Entry (PoE) for the turbine components is the Port of Heysham. It is anticipated that abnormal load vehicles transporting turbine components would travel from the Port of Heysham towards the Proposed Development via the strategic road network and the M6 motorway, before exiting at Junction 37 and continuing along the A684 to the proposed Site access junction.

### 10.3.3 Highway Network

#### 10.3.3.1 M6 Motorway

The M6 forms part of a key strategic route through the West Midlands, providing a vital connection between the M1 at Rugby and the Northwest, including Manchester, Liverpool and Preston. It is a major motorway artery linking the Midlands with London and the Channel ports to the South, as well as northern regions of the country.

The M6 is primarily a three-lane motorway in each direction, though it varies between two and four lanes in certain sections. It generally operates at the national speed limit although, due to variable speed limits and smart motorway upgrades, this changes.

#### 10.3.3.2 A684

The A684 is a two-way single carriageway road, running from Kendal in the west to Northallerton in the east and is designed as a local distributor road carrying traffic from rural settlements to the M6 motorway and the A1(M). The A684 operates at national speed limit except in built-up areas where the speed limit is 30mph.

The road is unlit and has no footway provision except in built up areas where footways and / or lighting is present. In vicinity of the site, the carriageway is unlit with no footways present.

It is worth noting that this section of the A684 which will be used by construction traffic also provides access to the Breedon Roan Edge Quarry site and is relatively well used by HGVs associated with the quarry operations.

### 10.3.4 Non-motorised User Network

A review of Westmorland and Furness Council's Public Right of Way (PRoW) map<sup>166</sup> indicates that the identified bridleways (559018, 546002) are all located more than 1km away from the proposed turbine locations and so would not impact directly on use of the PRoW network.

A review of the Walk Wheel Cycle Trust's National Cycle Network (NCN)<sup>167</sup> indicates that NCN Route 70 passes along the northern edge of the Site and is the only NCN in the Study Area. As noted above, the sections of road network likely to be included in the Study Area have no footway provision and are generally unlit.

### 10.3.5 Baseline Traffic Flows

Traffic flow data for the road sections that may be affected by the Proposed Development has been obtained from count point data available from the Department for Transport (DfT) Traffic Count Website<sup>168</sup> and the National Highways Traffic Count Website (WebTRIS)<sup>169</sup>. The Annual Average Daily Flow (AADF) data collected is summarised in Table 10.1, with Traffic Count Locations shown in **Figure 10.1**.

**Table 10.1: Traffic Flow Data on Key Link**

| Road / Location | Year | Source  | Source Ref.             | AADF   | HGV AADF | % HGV |
|-----------------|------|---------|-------------------------|--------|----------|-------|
| M6, Junction 37 | 2025 | WebTRIS | TMU Site 9528/2; 9527/2 | 43,405 | 11,976   | 27.6  |
| M6, Junction 37 | 2025 | WebTRIS | TMU Site 9528/1         | 1,130  | 117      | 10.4  |

<sup>166</sup> Westmorland and Furness Council, Public Rights of Way map. Available at: <https://www.westmorlandandfurness.gov.uk/parks-culture-and-leisure/countryside-access-and-rights-way/mapping> (Accessed April 2026)

<sup>167</sup> Walk Wheel Cycle Trust Website. Available Online at: <https://www.walkwheelcycletrust.org.uk/find-a-route-on-the-national-cycle-network/barrow-in-furness-to-windermere-via-kendal/> (Accessed March 2026)

<sup>168</sup> Department for Transport. Road Traffic Statistics: Interactive Map of Road Traffic Data in Great Britain. Available at: <https://roadtraffic.dft.gov.uk> (Accessed April 2026)

<sup>169</sup> National Highways. Road Traffic Statistics: Interactive Map of Road Traffic Data on National Highway maintained roads. Available at: <https://webtris.highwaysengland.co.uk/> (Accessed April 2026)

| Road / Location            | Year | Source | Source Ref. | AADF  | HGV AADF | % HGV |
|----------------------------|------|--------|-------------|-------|----------|-------|
| (northbound off-slip road) |      |        |             |       |          |       |
| A684                       | 2025 | DfT    | DfT - 7451  | 3,637 | 49       | 1.35  |

It is acknowledged that the traffic count on the A684 is located on the western side of the Breedon Roan Edge Quarry site. Therefore, quarry related traffic is likely not recorded within this traffic count. As it would be expected that traffic from the quarry would travel to and from the M6 and not west towards Kendal.

## 10.4 Potential Environmental Effects

In accordance with the Institute of Sustainability and Environmental Professionals (ISEP) (formerly the Institute of Environmental Management and Assessment (IEMA)), 'Guidelines for the Environmental Assessment of Traffic and Movement' (2023)<sup>170</sup> potential effects including Community Effects (severance, non-motorised user delay and amenity, fear and intimidation on and by road users), Road Vehicle Driver and Passenger Delay, Road User and Pedestrian Safety should be considered. The ISEP 2023 Guidelines<sup>170</sup> also identify noise, visual impact and air quality as relevant considerations; these matters are addressed within the relevant chapters of this Scoping Report.

Details of the construction programme, including traffic associated with the initial decommissioning of the existing turbines, are not yet confirmed. However, based on the available technical specifications and typical delivery vehicle numbers observed on recent repowering projects, construction phase traffic generation has been estimated on a robust worst-case basis. Traffic associated the initial decommissioning is expected to represent a relatively small component of the overall construction traffic generation. Turbine blades and towers will be broken down on-site to facilitate their removal by HGV, while below-ground infrastructure will generally be left in situ. On this basis, the traffic generation associated with the construction of the Proposed Development is considered to represent the worst-case scenario for the purposes of the assessment.

On non-concrete pouring days, peak construction traffic generation is anticipated to be up to 150 two-way vehicle movements per day, comprising approximately 100

<sup>170</sup> Institute of Sustainability and Environmental Professionals (2023) Guidelines for the Environmental Assessment of Road Traffic and Movement. [Online] Available at: <https://www.thenbs.com/PublicationIndex/documents/details?Pub=IEA&DocID=257892> (Accessed April 2026)

car/LGV movements and 50 HGV movements. On concrete pouring days, peak traffic generation is expected to increase to up to 500 two-way vehicle movements per day, comprising approximately 100 car/van movements and 400 HGV movements. These estimates assume that 100% of aggregate and concrete requirements are imported to the Site and therefore represent a robust worst-case scenario which is unlikely to occur in practice.

The lowest screening threshold traffic generation at non sensitive receptors identified within the ISEP 2023 Guidelines<sup>170</sup> is 30%. When compared with baseline conditions on the M6 motorway, the forecast construction traffic would result in a temporary increase of up to 1.2% in total traffic flows and up to 3.3% in HGV flows during peak construction activity. These increases are substantially below the screening threshold identified within the ISEP 2023 Guidelines<sup>170</sup> for non-sensitive receptors. Having regard to the scale and temporary nature of the forecast increase and the existing characteristics and capacity of the M6 motorway, construction traffic is not anticipated to result in a material change to the operation or capacity of the motorway network.

Along the short section of the A684 to be utilised by construction traffic, the forecast increase equates to a temporary increase of up to 14% in total traffic flows and a proportionally larger increase in HGV movements relative to the recorded baseline. However, this proportional change is a direct consequence of the very low existing HGV flows on this route and should not be considered in isolation. In accordance with established assessment practice, proportional changes on lightly trafficked rural routes should be considered alongside absolute traffic volumes, highway capacity, operational characteristics and receptor sensitivity.

As indicated in in Section 10.3.5, the traffic count location on the A684 is situated to the west of the quarry access, meaning that existing quarry related traffic is unlikely to be fully captured within the baseline data. As such, the calculated percentage increase is likely to overstate the actual change in traffic conditions. There are no nearby communities or local facilities along this short section of the A684, limiting the potential for Community Effects, including severance, amenity impacts and changes in non-motorised user delay.

Taking account of the temporary nature of construction traffic, the low absolute traffic flows, the characteristics and sensitivity of receptors along the affected routes, and the available residual capacity of the highway network, the forecast increase in construction traffic, including HGVs, is not anticipated to give rise to significant effects in relation to traffic and transport.

On this basis, significant effects in relation to traffic and transport are not anticipated and it is proposed that traffic and transport are scoped out of the EIA.

Notwithstanding this conclusion, and to support the assessment of traffic impacts associated with the Proposed Development, a standalone Transport Assessment (TA) will accompany the planning application. The TA will set out the anticipated construction traffic movements, assess the suitability of the proposed access routes to the Site, and consider potential road safety, traffic and delay implications on the surrounding highway network, including the M6 motorway and A684. The TA will also identify appropriate measures to mitigate any temporary disruption to the public highway network, where required. Further consultation will be undertaken as the project develops with Westmorland and Furness Council and National Highways to agree the scope of the TA.

Traffic generated during the operational phase of the Proposed Development will comprise activities associated with inspection, monitoring and general site upkeep. The operational phase is anticipated to generate negligible levels of traffic, limited to occasional maintenance visits by service vehicles. Based on the current operational assumptions, such visits are anticipated to occur approximately once per week on average and would be undertaken by vans or other similarly sized vehicles.

This level of operational traffic is substantially below the screening threshold for assessment identified within the ISEP 2023 Guidelines<sup>170</sup> and it is unlikely that the operation of the Proposed Development will result in any material impact on the surrounding highway network. The effect of operational traffic is therefore expected to be negligible, and the TA will focus principally on construction traffic impacts.

Traffic associated with the final decommissioning of the Proposed Development is expected to be less than that generated during construction. Furthermore, it is not possible to accurately forecast baseline traffic flow conditions more than 35 years into the future. It is therefore proposed that, prior to decommissioning, a proportionate traffic assessment is undertaken and appropriate traffic management measures agreed with Westmorland and Furness Council and National Highways at that time.

Given that the construction phase (including initial decommissioning) represents the more intensive traffic-generating phase and provides a robust basis for considering the potential traffic and transport effects of the Proposed Development, and that final decommissioning traffic is expected to be lower than construction traffic, the final decommissioning phase is proposed to be scoped out of the current EIA assessment.

## 10.5 Proposed Assessment Methodology

The TA will be carried out in line with the Legislation, Policy and Guidance outlined in Section 10.2.

The travel characteristics of the Proposed Development will be assessed using a first principles approach to calculate the vehicle trips generated by staff and the transportation of construction materials. The trip generation assessment will outline the level of staff vehicles and HGV vehicle trips expected during the peak month of construction to demonstrate a worst-case scenario. The assessment of potential cumulative impacts of known committed developments will also be undertaken. Any suitable new access arrangement will be designed in accordance with Cumbria Development Design Guide<sup>164</sup> or Design Manual for Road and Bridges where applicable with full consideration given to the road safety of all road users.

An Abnormal Load Route Assessment (ALRA) will also be undertaken to confirm that the proposed route can accommodate abnormal load vehicles and that their transportation will not have any detrimental effect on the proposed haulage route. The ALRA will also identify any additional off-site improvement works that may be required to make the route viable for abnormal load vehicles.

## 10.6 Approach to Mitigation

As indicated in **Section 10.5**, the TA will also outline measures to mitigate the impact of HGV traffic on the surrounding road network during the construction of the Proposed Development. Measures are anticipated to include but not limited to. routing of construction vehicles, access arrangements to the Proposed Development, details of the vehicle holding area(s), measures to reduce, wherever practicable, the use of public roads during morning and evening peak hours, details for the use of any traffic lights on public roads for safety, details for any temporary traffic management and warning signs.

It is anticipated that these measures will be developed and secured through a Construction Traffic Management Plan which would be agreed with Westmorland and Furness Council and National Highways and finalised post-consent but prior to the commencement of construction of the Proposed Development.

## 10.7 Consultation and Scoping Questions

Consultation will be conducted with the following consultees:

- Westmorland and Furness Council; and

- National Highways.

As part of this Scoping Report, key questions for consultees are:

- Q10.1 – Are consultees content with the proposed methodology and scope of the traffic and transport assessment?
- Q10.2 – Do consultees have any information that would be useful in the preparation of the Transport Assessment?
- Q10.3 – Are consultees content to scope out operational and final decommissioning traffic from further assessment?
- Q10.4 – Are you aware of any relevant policies and guidance documents not specifically mentioned in this chapter of the Report?
- Q10.5 - Are the council / statutory consultees aware of any specific access restrictions or limitations on the proposed abnormal loads route?

# 11. Cultural Heritage

## 11.1 Introduction

This chapter of the EIA Scoping Report outlines the baseline environment, potential impacts of the Proposed Development, and the proposed methodology of the assessment to be undertaken for cultural heritage and archaeology.

The assessment will be prepared by a suitably qualified archaeologist with experience in the assessment of wind energy developments in the UK.

The Scoping chapter is supported by the following figures:

- **Figure 11.1:** Site Layout and Cultural Heritage Study Areas;
- **Figure 11.2:** Designated and Non-designated Assets within 1 km; and
- **Figure 11.3:** Designated Assets within 15 km.

In addition, the Scoping chapter is supported by the following appendices:

- **Appendix A:** Cultural Heritage and Archaeology Baseline; and
- **Appendix B:** Assets Selected for Preliminary Anticipated Risk of Settings Impact.

Details of the existing turbines, proposed repowering layout, and baseline visibility analysis are provided in **Section 2: Description of the Proposed Development** and **Section 5: LVIA** of this Scoping Report. The cultural heritage and archaeology chapter should be read in conjunction with that material.

## 11.2 Legislation, Policy and Guidance

### 11.2.1 Legislation

The assessment will be conducted with reference to the relevant statutory and planning frameworks for cultural heritage. Key heritage legislation of relevance includes:

- National Planning Policy Framework (2026)<sup>171</sup>;
- Town and Country Planning Act (1990)<sup>172</sup>;

<sup>171</sup> UK Government (2026) National Planning Policy Framework, Paragraph 199. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Accessed March 2026]

<sup>172</sup> UK Government (1990) Town and Country Planning Act. Available at: <https://www.legislation.gov.uk/ukpga/1990/8/contents> [Accessed March 2026]

- The Ancient Monuments and Archaeological Areas Act (1979)<sup>173</sup>;
- The National Heritage Act (1983)<sup>174</sup>;
- Listed Buildings and Conservation Areas Act (1990)<sup>175</sup>;
- Enterprise and regulatory Reform Act (2013)<sup>176</sup>; and,
- Hedgerow Regulations (1997)<sup>177</sup>.

In addition, the ES will be conducted with reference to:

- National Policy Statements for Energy Infrastructure (2023, updated 2025)<sup>178</sup>; and
- The Planning Act (2008)<sup>179</sup>.

The energy National Policy Statements (NPSs), EN-1 – EN-6, outline the government's policy for delivering major energy infrastructure. The National Policy Statements (NPSs) that are of relevance to the Proposed Development are:

- the Overarching NPS for Energy (EN-1) (2023)<sup>180</sup>; and
- the NPS for renewable energy infrastructure (EN-3) (2023)<sup>181</sup>

### 11.2.2 Local Policy

The following is a summary of the key local heritage policy and guidance:

- Westmoreland and Furness Local Development Scheme (2025)<sup>182</sup>;
- South Lakeland District Council Local Development Framework Core Strategy (2010)<sup>183</sup>;
- Lake District National Park Local Plan (2021)<sup>184</sup>; and

173 UK Government (1979) Ancient Monuments and Archaeological Areas Act. Available at: [www.legislation.gov.uk/ukpga/1979/46](http://www.legislation.gov.uk/ukpga/1979/46) [Accessed March 2026]

174 UK Government (1983) National Heritage Act. Available at <http://www.legislation.gov.uk/ukpga/1983/47> [Accessed March 2026]

175 UK Government (1990) Planning (Listed Buildings and Conservation Areas) Act 1990. Available at: <https://www.legislation.gov.uk/ukpga/1990/9/contents>

176 UK Government (2013) Enterprise and Regulatory Reform Act 2013. Available at <https://www.legislation.gov.uk/ukpga/2013/24/schedule/17/enacted> [Accessed February 2026]

177 UK Government (1997) The Hedgerows Regulations 1997, Part II. Criteria. Available at: <https://www.legislation.gov.uk/uksi/1997/1160/schedule/1/part/II/made> [Accessed February 2026]

178 UK Government (2023), National Policy Statements for Energy Infrastructure. Available at: <https://www.gov.uk/government/collections/national-policy-statements-for-energy-infrastructure> [Accessed February 2026]

179 UK Government, Planning Act (2008). Available at: <https://www.legislation.gov.uk/ukpga/2008/29>

180 Department of Energy Security and Net Zero, 2023. Overarching National Policy Statement for Energy (EN-1). Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1>. [Accessed February 2026]

181 Department of Energy Security and Net Zero, 2023. National Policy Statement for Renewable Energy Infrastructure (EN-3). Available at: <https://assets.publishing.service.gov.uk/media/65a7889996a5ec000d731aba/nps-renewable-energy-infrastructure-en3.pdf> [Accessed February 2026]

182 Westmoreland and Furness Local Development Scheme (2025) Available at: Westmorland and Furness LDS February 2025. [Accessed March 2026].

183 South Lakeland District Council Local Development Framework Core Strategy (2010) Available at: Core strategy October 2010. [Accessed March 2026]

184 Lake District National Park Local Plan (2021) Available at: Local Plan : Lake District National Park [Accessed March 2026]

- Yorkshire Dales National Park Local Plan (2021)<sup>185</sup>.

### 11.2.3 Guidance

In addition to legislation and local policy, the following is a summary of the key heritage guidance:

- Historic England: Commercial Renewable Energy Development and the Historic Environment (2021)<sup>186</sup>;
- Historic England: Conservation Principles (2008)<sup>187</sup>;
- Historic England: Historic Environment Good Practice Advice in Planning: 2; Managing Significance in Decision-Taking in the Historic Environment (2015)<sup>188</sup>;
- Historic England: The Setting of Heritage Assets (2017)<sup>189</sup>;
- Guidance and Toolkit for Impact Assessments in a World Heritage Context (2022)<sup>190</sup>
- ClfA (2020) Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment<sup>191</sup>; and
- ClfA (2020) Standard and guidance for historic environment desk-based assessment<sup>192</sup>.

## 11.3 Preliminary Baseline Conditions

A review of the available Historic England (NHLE) and Historic Environment Records (HER) datasets which records heritage assets across England, as well as review of secondary sources such as historic mapping and LiDAR analysis, provides evidence of concentrated Bronze-Age defensive settlement and demonstrable Romano-British frontier landscapes in the wider vicinity of the Proposed Development, as well as evidence for multi-phase use of the landscape and assets within it throughout the

<sup>185</sup> Yorkshire Dales National Park Local Plan (2021) Available at: Local-Development-Scheme-Dec-21.pdf [Accessed March 2026]

<sup>186</sup> Historic England (2021) Commercial Renewable Energy Development and the Historic Environment. Historic England Advice Note 15. Available at: <https://historicengland.org.uk/images-books/publications/commercial-renewable-energy-development-historic-environment-advice-note-15/> [Accessed March 2026]

<sup>187</sup> Historic England (2008) Conservation Principles, Policies and Guidance. Available at: <https://historicengland.org.uk/images-books/publications/conservation-principles-sustainable-management-historic-environment/> [Accessed March 2026]

<sup>188</sup> Historic England (2015) Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning 2, Paragraph 11. Available at: <https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/> [Accessed March 2026]

<sup>189</sup> Historic England (2017) The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) Available at: <https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/> [Accessed March 2026]

<sup>190</sup> UNESCO, ICCROM, ICOMOS & IUCN (2022). Guidance and Toolkit for Impact Assessments in a World Heritage Context. Paris: UNESCO, Rome: ICCROM, Charenton-le-Pont: ICOMOS, and Gland: IUCN. ISBN 978-92-3-100535-0. Available at: <https://whc.unesco.org/en/guidance-toolkit-impact-assessments/> (Accessed: 11 September 2026).

<sup>191</sup> ClfA, 2020. Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment. Available online at: [https://www.archaeologists.net/sites/default/files/ClfA%26GCommissioning\\_2.pdf](https://www.archaeologists.net/sites/default/files/ClfA%26GCommissioning_2.pdf)

<sup>192</sup> ClfA, 2020. Standard and guidance for historic environment desk-based assessment. Available online at: [https://www.archaeologists.net/sites/default/files/ClfA%26GDBA\\_4.pdf](https://www.archaeologists.net/sites/default/files/ClfA%26GDBA_4.pdf)

medieval and post-medieval periods. Preserved medieval and post-medieval rural and agricultural character, along with continual agricultural and industrial improvements, which culminated in predominantly extractive land-use of the greater vicinity of the Proposed Development into the Modern period, have established the landscape surrounding the Site into what it is today.

Initial information relating to archaeology and cultural heritage has been gathered through a review of HER and available online resources to indicate potential heritage features of interest, as presented below.

### 11.3.1 Data Sources

For details of the data utilised for this study please see **Section 1.3.1.1 of Appendix B: Archaeological and Historical Baseline.**

#### 11.3.1.1 LiDAR Data

Digital terrain model (DTM) LiDAR data, at 1 m resolution, was processed using ArcGIS software. Multiple hillshade and shaded-relief models were created, principally via adjustment of the following variables: azimuth, height, and 'z-factor' or exaggeration. The models created were then colourised using pre-defined ramps and classified attribute data, to reveal the micro-topography and allow for analysis.

### 11.3.2 Proposed Cultural Heritage Study Areas

To assess potential direct/indirect physical impacts and setting impacts on the historic environment, three Study Areas have been established:

- 1 km Study Area;
- 5 km Study Area; and
- 15 km Study Area.

These study areas have been established based on a contextual review of the Proposed Development and the understanding of potential impacts and the historical and archaeological baseline

#### 1 km Study Area

The 1 km Study Area (**Figure 11.1**) will inform the cultural heritage baseline, against which, potential direct impacts on both known and previously unrecorded heritage assets will be assessed. This area includes the Site and all land within a 1 km radius. Consideration of the wider historic environment will be undertaken where relevant to the Proposed Development, and a detailed review of the archaeology within the 1 km Study Area is presented in Appendix A: Archaeological and Historical Baseline.

## 5 km Study Area

The 5 km Study Area (**Figure 11.1**) encompasses the Site and all land within a 5 km radius. It will be used to identify potential setting effects on designated heritage assets.<sup>193</sup>

## 15 km Study Area

The 15 km Study Area comprises all land between the 5 km Study Area out to a 15 km radius. It will be used to identify potential setting effects on designated heritage assets, as well as selected non-designated assets agreed through consultation with the appropriate Local Planning Authorities (LPAs).

This Study Area will not act as an arbitrary boundary for the assessment. Heritage receptors located beyond 15 km will also be considered if they fall within the bare-earth ZTV of the Proposed Development, derive significance from long-distance views, or are identified by Historic England (HE) or the LPAs for inclusion within any reasonable assessment. A sieving exercise will be undertaken to determine which heritage assets will be taken forward to detailed setting assessment.

The detailed assessment of setting effects will be presented as a standalone Technical Appendix to the Archaeology and Cultural Heritage ES/EIA Chapter.

The 15 km Study Area will also form the initial extent for the assessment of cumulative impacts.

Any additional assets located outside these search areas that are relevant to understanding the Site's historic landscape context, or that may be susceptible to impacts, will also be considered as appropriate.

## 11.3.3 Temporal Scope

### Construction

The construction phase of the Proposed Development may result in the following impacts on cultural heritage assets:

- Direct physical impacts arising from ground disturbance, which may lead to the partial or total loss of known or previously unrecorded heritage assets.
- Indirect physical impacts associated with construction activities, including vehicle movement, soil storage, or changes in drainage that may affect nearby assets.

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<sup>193</sup> A preliminary review of non-designated assets within 1km has not identified that detailed setting assessment is anticipated and will thus be scoped out. Consultation with the LPA may highlight select features that may be included for setting assessment within the ES, as appropriate.

- Temporary setting impacts on cultural heritage assets resulting from construction works, plant, and machinery. These changes to setting are generally short-term in nature, typically occurring over days, weeks, or months.

### **Operation & Maintenance**

The operational phase of the Proposed Development may give rise to the following impacts on cultural heritage assets within the Study Areas:

- Maintenance-related impacts, where groundworks or activities extending beyond the original construction footprint have the potential to affect heritage assets. Such impacts are typically of lower magnitude than those associated with construction but would be permanent and irreversible. These effects generally relate to assets located within the Site itself.
- Setting impacts arising from the presence and operation of the turbines and associated infrastructure. These may include visual or acoustic changes, or alterations to the wider historic landscape that could influence the way in which cultural heritage assets are experienced or understood. Such impacts would remain throughout the operational lifespan of the Proposed Development but would typically be fully reversible following the removal of above-ground infrastructure.

### **Decommissioning**

The decommissioning phase of the existing turbines currently located on the Site, as well as any future decommissioning of the Proposed Development, has the potential to generate the following impacts on cultural heritage assets:

- Direct impacts associated with removal works, including ground disturbance during the extraction of foundations or associated infrastructure. These activities may affect known or previously unrecorded subsurface heritage remains, although impacts are expected to be limited to areas already disturbed during construction.
- Temporary setting impacts arising from the presence of cranes, plant, and decommissioning activities. As with construction, these effects would be short-term and reversible, occurring only for the duration of the works.
- Restoration of setting, as the removal of above-ground infrastructure typically results in the full or near-full reinstatement of baseline visual conditions. This often leads to a beneficial long-term effect on the setting of cultural heritage assets, particularly where turbines or tall structures currently form a prominent feature within key views.

- Opportunities for mitigation, including archaeological monitoring during ground-breaking works and the reinstatement of landform or vegetation that may enhance the historic landscape character following turbine removal.

The decommissioning of the existing turbines located on the Site, and eventual decommissioning of the repowered scheme, is expected to result in temporary impacts comparable in nature and extent to those that occur during the construction phase. These may include limited ground disturbance within already affected areas and short-term changes to the visual and acoustic environment associated with the presence of plant and machinery.

The detailed decommissioning methodology as part of a sustainable decommissioning strategy, will be confirmed at a future stage, and the specific processes and associated effects cannot be defined at this stage of assessment. On this basis, Construction Phase decommissioning shall be scoped in for assessment within the EIA; while final decommissioning effects are proposed to be scoped out of the current assessment.

A proportionate assessment of likely effects on cultural heritage assets will be undertaken prior to commencement of each decommissioning stage, once the methods and programme are known and can be appropriately considered.

### 11.3.3.2 Archaeological and Historical Background

This section provides a period-by-period summary overview of the chronological development of the 1 km Study Area and focuses on the known heritage assets within the Site. Further information on the contextual background of the Site is detailed in **Appendix B: Cultural Heritage and Archaeology Baseline** and can be seen in **Figures 11.2 and 11.3**.

### 11.3.3.3 Known Cultural Heritage Assets within 1 km

There are no nationally designated assets within 1 km of the Proposed Development. There are four non-designated assets located within the Proposed Development<sup>194</sup>.

### 11.3.3.4 Prehistoric

Four prehistoric assets are recorded within the 1 km Study Area: a cord-rig cultivation system (SMR44463), a hut platform later used as a triangulation point (SMR44464), a possible hut circle with an associated stack stand (SMR44465), and a curvilinear enclosure (SMR44466). Together, they indicate low-intensity agriculture and small-scale settlement from the Bronze-Age onwards, with some later reuse of high ground

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<sup>194</sup> Publicly available information from Westmoreland and Furness Council was consulted, but an official HER request to ascertain the most up-to-date information on non-designated assets in the 1 km Study Area of the Proposed Development will be required at the ES/EIA stage.

for surveying. Collectively, these sites reflect a dispersed pattern of prehistoric land use across the upland landscape.

### 11.3.3.5 Romano-British

One Romano-British asset is recorded within the 1 km Study Area: the Lakethwaite Enclosures in Firbank (SMR18592).

### 11.3.3.6 Medieval

Five medieval assets are recorded within the 1 km Study Area: two parks (Firbank, SMR4030; New Hutton, SMR6813), a market cross (SMR5489), a group of standing stones (SMR4031), and a drainage feature on Firbank Fell (SMR18595). These sites span a broad timeframe, with several showing continued use or modification into the post-medieval period. Together, they reflect long-standing patterns of land management, agricultural activity, and community practices, and demonstrate how features such as parks, boundary stones, and route-side markers were maintained or adapted over successive centuries.

### 11.3.3.7 Post-Medieval

Within the 1 km Study Area, 25 post-medieval and modern assets are recorded, largely comprising quarries, gravel pits and extractive features across Lambrigg, Firbank, New Hutton, and Docker. These include multiple workings at Green Dike, Kiln Head, Wythmoor, Lambrigg Fell, Roan Edge, and Holme Park, along with associated trackways, field boundaries, and ridge and furrow. A water-powered corn mill and several quarry-related structures also form part of the record. Collectively, these assets reflect the rapid expansion of local quarrying and industrial activity from the post-medieval period onwards.

### 11.3.3.8 Known Cultural Heritage Assets within 5 km

There are 91 designated assets within 5 km of the Proposed Development:

- One Grade I Listed Building
  - The Friends Meeting House and Adjoining Cottage to West (1384080);
- Five Grade II\* Listed Buildings; and
- 85 Grade II Listed Buildings.

The 5 km Study Area contains a substantial concentration of designated heritage assets, comprising exclusively Grade I, Grade II\*, and Grade II Listed Buildings, with the majority dating to the post-medieval period. These assets include a wide range of rural domestic buildings, farmsteads, barns, and associated outbuildings, as well as churches, bridges, milestones, and historical infrastructure such as viaducts, toll

cottages, limekilns, and water management structures. Higher-status dwellings are also represented, including Ingmire Hall, Shaw End, Grayrigg Hall, and Benson Hall, alongside notable ecclesiastical complexes such as the Churches of All Saints, St John, St Stephen, and St Gregory. Key transport-related structures include the Lune Viaduct, Lowgill Viaduct, Docker Viaduct, several historical road bridges, and multiple milestones marking historic routeways.

A small number of medieval-origin features also survive, including graveyard boundary walls linked to earlier parish arrangements, though many later buildings continue long-established settlement patterns.

Collectively, these assets reflect a well-developed historical rural landscape characterised by dispersed farmsteads, parish centres, historical transport corridors and estate-based activity. They illustrate the architectural, agricultural, and infrastructural development of the region from the medieval period through the 19<sup>th</sup> and early 20<sup>th</sup> centuries.

#### 11.3.3.9 Known Cultural Heritage Assets within 15 km

There are 1,188 designated assets between 5 -15 km of the Proposed Development:

- One World Heritage Site
  - The English Lake District (1452615);
- 53 Scheduled Monuments;
- 1,121 Listed Buildings, comprised of:
  - Eight Grade I;
  - 58 Grade II\*, and
  - 1,055 Grade II.
- Nine Conservation Areas; and
- Four Registered Parks and Gardens, including:
  - One Grade I, Levens Hall Park; and
  - Three Grade II Parks and Gardens.

#### World Heritage Site

One World Heritage Site lies within the 15 km Study Area: The English Lake District (1452615), designated for its outstanding universal value as a cultural landscape shaped by centuries of upland farming, picturesque aesthetic traditions and early tourism. Although centred approximately 7.7 km to the west of the Study Area, its inclusion reflects the wider regional context of managed estates, historic settlement patterns and long-term landscape use that characterise this part of Cumbria.

The English Lake District is a 2,292km<sup>2</sup> mountainous landscape, characterised by glaciated valleys, steep fells, and elongated lakes. Its character reflects centuries of hill farming, including Herdwick sheep, common grazing, and stone-walled field systems set within a dramatic natural topography. Since the 18<sup>th</sup> century, its scenery and cultural associations have influenced ideas about landscape value, public enjoyment and conservation, contributing to its national and international importance.

The English Lake District was inscribed on the UNESCO World Heritage List in 2017 as a continuing cultural landscape under criteria (ii)<sup>195</sup>, (v)<sup>196</sup> and (vi)<sup>197</sup>, recognising the interaction between the extensive agro-pastoral landscape with dramatic natural scenery, its profound influence on landscape aesthetics and conservation philosophy, and its continuing cultural traditions.

### Scheduled Monuments

The 15 km Study Area contains a diverse and extensive collection of Scheduled Monuments, representing activity from the prehistoric, Romano-British, medieval, and post-medieval periods. Prehistoric sites are well represented and include stone circles (e.g. Gamelands, 1011138), ring cairns and round cairns distributed across upland locations (e.g. 1011148, 1011150, 1011157, 1015971), and several unenclosed and enclosed settlements (e.g. Howerigg settlement, 1007218). These highlight long-term occupation and ritual use of the surrounding landscape from the Neolithic through the Bronze Age.

Romano-British activity is marked by a series of rural settlements and defended enclosures (e.g. Watercrook Roman fort and civil settlement, 1007178; Millrigg settlement, 1008898; Gawklads farmstead, 1021251), as well as a Roman milestone near Middleton (1007175), reflecting the area's integration within the Roman frontier and its associated agricultural hinterland.

Medieval sites include multiple motte-and-bailey castles (Castlehow Tower, 1007128; Castle Howe, 1007130; Cockpit Hill, 1007153), fortified manorial sites such as Burneside Hall (1007129), monastic and ecclesiastical remains (Friar Biggins, 1007636; chapel sites 1007162, 1007165), and small settlement complexes (e.g. Newbiggin-on-Lune, 1007239). These illustrate the varied character of medieval

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195 to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design. UNESCO World Heritage Centre. *The Criteria for Selection*. Available at: <https://whc.unesco.org/en/criteria/> (Accessed: 11 September 2026).

196 to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change. *Ibid*.

197 to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria). *Ibid*.

landholding, defence, religious activity, and dispersed rural settlement across the region.

Post-medieval assets are dominated by transport and industrial infrastructure, particularly a strong cluster of historic bridges (e.g. Stramongate Bridge, 1004592; Levens Bridge, 1007111; Gaisgill packhorse bridge, 1007113) and aqueducts (Sedgwick aqueduct, 1007095). The region's industrial past is further represented by extant gunpowder works at Gatebeck and Sedgwick (1018135, 1018136, 1018824), as well as infrastructure such as the Hincaster Tunnel horse path (1004594). These monuments highlight the area's strategic transport corridors, water-powered industries, and the expansion of extractive and manufacturing activity from the 17th century onwards.

Together, the Scheduled Monuments form a multi-period archaeological landscape demonstrating long-term occupation, changing settlement forms, strategic Roman and medieval use, and significant post-medieval industrial development within the wider setting of the Proposed Development.

### Listed Buildings

Seven Grade I Listed Buildings lie within the 15 km Study Area, representing some of the region's most important ecclesiastical and high-status domestic architecture. These include medieval churches such as the Churches of Holy Trinity (1319009) and St Andrew (1383978), the medieval hall-house Castle Dairy (1145642), and the Church of St Mary (1145774), which retains both medieval and post-medieval fabric. Major historic houses and estate centres are also present, including Sizergh Castle (1318962) and Levens Hall (1350017), alongside the post-medieval Abbot Hall Art Gallery (1145684). Together, these buildings illustrate the long-established religious, residential and estate traditions that characterise the wider historic landscape.

A substantial group of Grade II\* Listed Buildings also lies within the wider Study Area, comprising high-quality medieval and post-medieval churches, halls and farmsteads—including St Peter (1086557), Burneside Hall (1289216), Selside Hall (1311671) and Preston Patrick Hall (1312117)—alongside post-medieval estates, parish churches and associated outbuildings at sites such as Middleton Hall (1086861, 1086862), Sizergh Castle's ancillary structures (1136853) and numerous farmhouses, barns and gentry residences. These buildings collectively reflect the area's strong traditions of ecclesiastical focus, estate development and long-established agricultural settlement.

Additionally, there are a further 1,055 Grade II Listed Buildings of predominantly the post-medieval and modern periods within the 15 km Study Area. These largely comprise urban and rural dwellings, accommodations, barns and other associated

outbuildings, limekilns, bridges and other transport-related structures, schools, memorials, and ecclesiastical buildings of comparatively low regional significance. Some assets identified as part of broader 'Townscape' groups may be removed from scope at a later stage following the sieving exercise, given the generally insular and self-contained nature of these groups.

### **Conservation Areas**

Nine Conservation Areas fall within the 15 km Study Area; all of post-medieval character, and centred on historic rural settlements, market towns and industrial or estate-related clusters. These include the village-focused areas of Dent, Ravenstonedale, Orton, Milnthorpe and Heversham, the mill-based landscape at Farfield Mill, and the larger historic town cores of Sedbergh, Kendal and Kirkby Lonsdale. Collectively, they reflect long-established settlement patterns, traditional building forms and the development of local commercial and agricultural centres across the region.

### **Registered Parks and Gardens**

Four Registered Parks and Gardens are located within the 15 km Study Area, all of post-medieval origin and associated with major historic estates. These include the Grade I landscape at Levens Hall (1000667), renowned for its nationally significant formal gardens, and three Grade II registered sites: Dallam Tower (1000664), Sizergh Castle (1000673) and Queen's Garden (1400679). Together, these designed landscapes reflect the development of elite estates and ornamental grounds from the 17th century onwards and form important components of the region's wider historic environment.

## **11.4 Potential Impacts and Effects**

The following potential effects on cultural heritage and archaeological receptors may arise from the Proposed Development in the absence of appropriate mitigation. These will be assessed within the cultural heritage and archaeology chapter of the ES:

- Direct physical impacts resulting from ground disturbance within the Site during construction phase.
- Indirect physical impacts on heritage assets recorded within the 1 km Study Area arising from construction activities.
- Significant setting effects on heritage assets located within the 15 km Study Area during the operational phase of the Proposed Development.

### 11.4.1 Direct and Indirect Physical Impact

Direct and indirect physical impacts are not anticipated across the entire Site but are expected to be confined to areas where ground disturbance occurs during construction or landscaping. These types of impacts are therefore typically associated with the construction phase of a development.

**Direct physical** impacts involve physical alteration, such as truncation, removal, or structural damage, that may affect known heritage assets or previously unrecorded buried or above-ground remains. Such impacts are generally permanent and irreversible.

*Indirect physical* impacts arise from construction-related activities without direct contact between plant, machinery, or personnel and the asset itself. These may result from vibration generated by vehicle or plant movement, changes in groundwater conditions leading to desiccation or saturation, or other remote construction activities that affect the stability or integrity of heritage assets.

Ground-disturbing works associated with the Proposed Development have the potential to directly affect the three known non-designated heritage assets located within the Site boundary (SMRs 6808, 17507, and 17548), all of which relate to former agricultural or extractive activity. Direct physical impacts may include the truncation or removal of buried archaeological deposits, modifications to surviving earthworks, and disturbance of any unrecorded features associated with historic land use.

Beyond the Site boundary, the remaining known assets within the 1 km Study Area, comprising prehistoric settlement traces (SMR44463–44466), the Romano-British Lakethwaite Enclosures (SMR18592), medieval parks, route markers and standing stones (SMR4030, SMR6813, SMR5489, SMR4031, SMR18595), and numerous post-medieval to modern extractive and agricultural features, are unlikely to be directly impacted due to their distance from proposed construction areas. However, indirect physical impacts may arise where development works require upgrading or widening of existing access routes, creation of temporary compounds, or installation of ancillary infrastructure in proximity to these assets.

There is also a recognised potential for direct impacts to previously unknown archaeological remains within the Site, particularly those relating to earlier prehistoric occupation, Romano-British rural activity, and medieval or post-medieval land use. Given the multi-period use of the landscape and limited previous investigation, such remains may survive as buried features beneath later agricultural or industrial deposits. Any intrusive construction works—such as turbine foundations, cable

trenches, new tracks or borrow pits—therefore carry a risk of disturbing or removing unrecorded archaeology.

Overall, while direct impacts are expected to be limited to works within the Site boundary, both known and unknown heritage assets have the potential to be physically affected. Further refinement of asset locations through HER data and on-site investigation at the ES/EIA stage will be required to more accurately predict the scale and nature of these impacts and to inform appropriate mitigation.

### 11.4.2 Effects on Setting

Changes to setting may occur during the construction phase; however, these effects are typically most pronounced during the operational phase, when all above-ground elements of the Proposed Development are in place and exert their greatest visual and experiential influence.

For the Proposed Development, there is potential for setting effects on designated heritage assets and on significant non-designated assets located within the 15 km Setting Study Area. Effects may also extend to the wider historic landscape where assets are sensitive to changes in long-distance views or skyline character. There are approximately 1,279 designated assets located within the 15 km Study Area, this number represents the total dataset before sieving.

At this stage of the assessment, 48 designated assets within 15 km of the Proposed Development have been preliminarily sieved-in as being at a heightened anticipated risk for experiencing settings impacts. These are outlined in Appendix B.

### 11.4.3 Cumulative Impacts

Cumulative effects may arise during both the construction and operational phases of the Proposed Development. These effects have the potential to occur through interactions between direct physical impacts, indirect physical impacts, and setting impacts associated with other relevant developments.

A list of projects with the potential to contribute to cumulative impacts on heritage assets will be developed and agreed with Historic England (HE) and the relevant LPAs during preparation of the archaeology and cultural heritage chapter of the ES.

## 11.5 Mitigation

### 11.5.1 Direct Physical Effects

Known archaeological remains identified through the archaeological and historical baseline will be avoided during the design of the Proposed Development wherever

feasible, subject to other on-site constraints. The assessment of direct impacts will consider the proximity of known assets to proposed areas of ground disturbance, alongside the potential for groundworks to affect previously unknown heritage remains.

Where avoidance is not possible through iterative design, consultation will be undertaken with the appropriate stakeholders to develop a proportionate mitigation strategy aimed at reducing the magnitude of effect on affected assets. This may include the preparation of Written Schemes of Investigation (WSIs) for archaeological mitigation works, alongside the development of a Cultural Heritage Management Plan (CHMP), including a chance-finds procedure, where required

Mitigation may be undertaken in advance of, or during, construction, with potential mitigation measures including:

- Additional desk-based research to refine the historic environment baseline.
- Provision of design input to maximise avoidance of known features or to minimise / limit impacts.
- Pre-commencement archaeological investigation: setting assessments and associated visualisations, non-invasive survey approaches, or invasive trial trenching, to inform the impact assessment and help offset effects, with appropriate reporting and dissemination of results.

Should significant buried archaeological remains be identified through these mitigation measures, targeted pre-construction excavation may be necessary. All proposed mitigation will be agreed in advance with the Local Planning Authority to ensure that it is proportionate, robust, and appropriate to the significance of the assets concerned.

### 11.5.2 World Heritage Site

Specific mitigation for the English Lake District World Heritage Site (WHS) will include the development of a screening assessment and consultation with HE and other relevant stakeholders and may include the preparation of a Heritage Impact Assessment (HIA), in line with UNESCO's WHS Toolkit requirements. Following the WHS Toolkit process will assess how the Proposed Development may affect the Outstanding Universal Value (OUV) of the WHS and the attributes for which it was inscribed on the World Heritage List.

### 11.5.3 Effects on Setting

In the first instance, adverse setting impacts will be mitigated through amendments to the layout and design of the Proposed Development, where feasible within the

constraints of the Site. Where design-led mitigation is not possible, consultation will be undertaken with HE and the relevant LPAs to agree an appropriate approach to managing setting impacts. Any practical measures to reduce these effects will be developed in accordance with relevant HE guidance.

At this stage, 1,279 designated heritage assets have been identified within 15 km of the Proposed Development. Of these, 48 assets have been initially identified as being at risk of experiencing potential significant impacts.

## 11.6 Proposed Scope of EIA/ES Chapter

Table 11.1 contains a list of all environmental factors relating to cultural heritage and archaeology that will be scoped in to or scoped out of the assessment.

**Table 11.1 Cultural Heritage Factors to be Scoped In or Out of the Assessment**

| Environmental Receptor, Assessment, or Effect                                                                                                                                                        | Scoped In/Out | Rationale                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Direct physical impacts to Heritage Assets within the Site                                                                                                                                           | Scoped In     | Direct physical impacts to heritage assets as a result of the Proposed Development are considered possible and would have a significant impact if identified.                                                                             |
| Indirect physical impacts to Heritage Assets within 1 km.                                                                                                                                            | Scoped In     | Indirect physical impacts to heritage assets as a result of the Proposed Development are considered possible and would have a significant impact if identified.                                                                           |
| Setting impacts to designated assets within the 15 km Study Area.                                                                                                                                    | Scoped In     | Additional assets beyond 15 km may be scoped in where:<br>They fall within the bare earth ZTV;<br>They have been requested for assessment by stakeholders; and/or,<br>They have the potential to be impacted by the Proposed Development. |
| Setting impacts to regionally and nationally important non-designated heritage assets within the 5 km Study Area, with inclusion for assessment decided following consultation and sieving exercise. | Scoped In     | Additional assets beyond 5 km may be scoped in where:<br>They fall within the bare earth ZTV;<br>They have been requested for assessment by stakeholders; and/or,<br>They have the potential to be impacted by the Proposed Development.  |

| Environmental Receptor, Assessment, or Effect                                                                                                                                             | Scoped In/Out | Rationale                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The Cumulative Effect of the Proposed Development in conjunction with other wind farm developments within 15 km.                                                                          | Scoped In     | Additional developments beyond 15 km may be included for assessment where:<br>Bare earth ZTVs overlap;<br>They have been requested for assessment by stakeholders; and/or,<br>They have the potential to impact the setting of assets in conjunction with the Proposed Development. |
| Assessment of the direct physical impacts to heritage assets outwith the Proposed Site boundary, with the possible exception of designated assets such as bridges along transport routes. | Scoped Out    | Significant, direct physical impacts to heritage assets outwith the Site are considered unlikely.                                                                                                                                                                                   |
| Indirect physical impacts to heritage assets outwith the 1 km study area, with the exception of designated assets such as bridges along transport routes.                                 | Scoped Out    | Significant, indirect physical impacts to heritage assets outwith the Site are considered unlikely.                                                                                                                                                                                 |
| Setting impacts to non-designated heritage assets of Local Importance (as defined by the HER).                                                                                            | Scoped Out    | Significant setting impacts to non-designated heritage assets of Local Importance are considered unlikely.                                                                                                                                                                          |
| Setting impacts to designated heritage assets between 5 and 15 km from the Site where they are not considered for assessment following consultation and sieving exercise                  | Scoped Out    | Setting impacts to designated heritage assets between 5 and 15 km from the Site where they are not considered for assessment following consultation and sieving exercise                                                                                                            |
| Setting impacts to Grade II* and II Listed Buildings beyond 5 km where they are located within or clearly associated with nucleated settlement or discrete feature grouping.              | Scoped Out    | These receptors do not meet the criteria which would require them to be scoped in for further assessment, and there is therefore likely to be little to no impact on the receptors described.                                                                                       |
| Impact resulting from the construction phase Decommissioning activity of the existing Development.                                                                                        | Scoped In     | Direct, Indirect and Setting effects associated with Construction phase Decommissioning of the existing Development.                                                                                                                                                                |
| Impact resulting from the final Decommissioning phase of the Proposed Development.                                                                                                        | Scoped Out    | Impact is anticipated to be the same as presented within the construction phase.                                                                                                                                                                                                    |

### 11.6.1 Assessment of Cultural Significance

Heritage assets will be assessed in terms of their cultural significance, following the requirement in EN-1 section 5.9.10, and taking account of Historic England's guidance on 'Managing Significance in Decision-Taking in the Historic Environment' (GPA2).

Significance, in relation to heritage policy, is defined in the NPPF as "the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting."

The NPPF glossary and the PPG provide that an asset's significance derives from its heritage 'interests', which the latter defines as follows:

- Archaeological interest: "As defined in the Glossary to the National Planning Policy Framework, there will be archaeological interest in a heritage asset if it holds, or potentially holds, evidence of past human activity worthy of expert investigation at some point".
- Architectural and artistic interest: "These are interests in the design and general aesthetics of a place. They can arise from conscious design or fortuitously from the way the heritage asset has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skills, like sculpture."
- Historic interest: "An interest in past lives and events (including pre-historic). Heritage assets can illustrate or be associated with them. Heritage assets with historic interest not only provide a material record of our nation's history but can also provide meaning for communities derived from their collective experience of a place and can symbolise wider values such as faith and cultural identity."

Historic England's 'Statements of Heritage Significance: Analysing Significance in Heritage Assets', Historic England Advice Note 12 (2019), also promotes the use of this terminology and methodology. This approach allows for a detailed and justifiable determination of heritage significance and the interests from which that significance derives.

In accordance with EN-1, the level of significance attributed to heritage assets will be articulated as follows:

- Designated heritage assets of the highest significance, as identified in section 5.9.30 of EN-1, comprising Grade I and II\* Listed buildings, Grade I and II\* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, World Heritage Sites and Registered Battlefields (and also including some

Conservation Areas) and non-designated heritage assets of archaeological interest which are demonstrably of equivalent significance to Scheduled Monuments, as identified in section 5.9.6 of EN-1 (2023);

- Designated heritage assets of less than the highest significance, as identified in section 5.9.30 of EN-1, comprising Grade II Listed buildings and Grade II Registered Parks and Gardens (and also some Conservation Areas); and
- Non-designated heritage assets, as defined within the PPG as “buildings, monuments, sites, places, areas or landscapes identified by plan-making bodies as having a degree of significance meriting consideration in planning decisions, but which do not meet the criteria for designated heritage assets”.

### 11.6.2 Magnitude of Impact

Magnitude of impact refers to the predicted degree of change to the baseline historic environment during, and following, construction of the Proposed Development. This assessment adopts a qualitative approach to evaluating changes to historic significance, rather than relying on traditional scalar or matrix-based methods. This approach aligns with current planning policy and heritage guidance and enables a more flexible, nuanced consideration of the ways in which the Proposed Development may alter the significance of affected heritage assets.

### 11.6.3 Setting Assessment

Assessment of harm to the significance of heritage assets arising from changes to setting will be undertaken in accordance with HE’s *The Setting of Heritage Assets* (2017), which provides the primary industry guidance for evaluating heritage setting.

To support the assessment, reference will be made to the extent of potential visual change as indicated by the bare-earth ZTV and by relevant viewpoints identified through the Landscape and Visual Impact Assessment (LVIA).

A sieving exercise will be applied to determine which heritage assets are taken forward to detailed setting assessment. Assets will be included where they meet the following criteria:

- They share intervisibility with the Proposed Development or hold a material non-visual associative relationship with it.
- They derive part of their significance from setting, in line with relevant planning policy and heritage guidance.
- Their location within the ZTV indicates a potential for visual or experiential change.

### 11.6.4 Significance of Effects

The assessment will combine a detailed description of the heritage significance of each asset potentially affected by the Proposed Development, including the specific interests from which that significance derives, with a prediction of the degree of change (magnitude) that may result from the Proposed Development. Together, these elements will inform the evaluation of the overall effect on each asset. Professional judgement will be applied in each case to determine the likely significance of effect, in line with the matrix shown in **Table 11.2**. In accordance with EIA regulations, where the Proposed Development is predicted to result in a substantial reduction in the significance of a heritage asset, this will be identified as a significant effect.

**Table 11.2** Matric for Determining the Sensitivity of Effects

|                              |            | Sensitivity of Receptor / Receiving Environment |            |                |            |
|------------------------------|------------|-------------------------------------------------|------------|----------------|------------|
|                              |            | High                                            | Medium     | Low            | Negligible |
| Magnitude of Change / Effect | High       | Major                                           | Major      | Moderate/Minor | Negligible |
|                              | Medium     | Major                                           | Moderate   | Minor          | Negligible |
|                              | Low        | Moderate/Minor                                  | Minor      | Minor          | Negligible |
|                              | Negligible | Minor                                           | Negligible | Negligible     | Negligible |

### 11.6.5 Assumptions, Limitations, and Uncertainties

Although it is unlikely that the overall predicted impacts of the Proposed Development on cultural heritage resources will diverge from the assessment presented here, there are important limitations to the available data set that it is important to highlight:

- Desk-based research relies on baseline data from third-party sources. Often these sources are entirely reliable, yet there are inevitable gaps in their geographical coverage; and
- Although below-ground impacts can be predicted, there remains residual potential for encountering previously unknown and unexpected remains.

## 11.7 Consultation and Scoping Questions

Consultation will be conducted with the following statutory consultees:

- Westmorland and Furness Council;
- Lake District National Park;
- Yorkshire Dales National Park; and
- Historic England.

Key questions for consultees are:

- Q7.1 – Do Consultees agree with the proposed methodology and scope of assessment?
- Q7.2 – Do Consultees have any information regarding current or recent archaeological work or projects being undertaken within or in the vicinity of the Proposed Development, particularly those whose results may not yet be recorded in the local HER or HES datasets?
- Q7.3 – Are Consultees aware of any further sites with statutory protection within the wider landscape whose settings may be affected by the Proposed Development?
- Q7.4 – Do Consultees have details of any cultural heritage sites in the vicinity of the Proposed Development which it considers may raise significant issues within the ES process for this Development?
- Q7.5 – Are Consultees aware of any additional stakeholders who will require consultation or where consultation would be desirable.
- Q7.6 – Do Consultees have any defined templates or assessment approach for assessment in line with the WHS Toolkit?

# 12. Noise and Vibration

## 12.1 Introduction

This chapter of the Scoping Report outlines the scope of the environmental assessment for noise on human receptors for the Proposed Development. Any noise effects on ecological receptors are discussed in **Chapter 6: Ecology** and **Chapter 7: Ornithology**. Specifically, this chapter details the relevant legislation and guidance, the baseline conditions and key sensitivities within the Study Area, the potential impacts and effects, the detailed environmental assessment method, potential mitigation, and concludes with the proposed scope of the noise EIA/ES chapter.

## 12.2 Legislation and Guidance

This section outlines the noise legislation and guidance relevant to the Proposed Development

### 12.2.1 Legislation

- The Control of Pollution Act 1974; and
- The Environmental Protection Act 1990.

### 12.2.2 National Planning Policy

- Overarching National Policy Statement for Energy (EN-1) (2026);
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (2026);
- National Policy Statement for Electricity Networks Infrastructure (EN-5) (2026);
- National Planning Policy Framework (2026); and
- Noise Policy Statement for England (NPSE) (2010).

### 12.2.3 Local Planning Policy

- Cumbria Wind Energy Supplementary Planning Document (2007); and
- Cumbria Renewable Energy Capacity and Deployment Study (2011);

## 12.2.4 National Guidance

- British Standard 5228-1: 2009+A1:2014 “Code of practice for noise and vibration control on construction and open developments – Noise” (BS 5228-1);
- British Standard 4142:2014+A1:2019 “Methods for Rating and Assessing Industrial and Commercial Sound” (BS 4142);
- British Standard 8233:2014 “Guidance on sound insulation and noise reduction for buildings” (BS 8233);
- ETSU-R-97 “The Assessment and Rating of Noise from Wind Farms” (1996);
- Department for Energy Security and Net Zero “Assessment and Rating of Wind Turbine Noise” (ARWTN, 2026);
- Institute of Acoustics “A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise” (IoA GPG, 2013);
- ISO 9613-2:2024 “Acoustics — Attenuation of sound during propagation outdoors”;
- Planning Practice Guidance for Noise (issued 2014, last updated 2019);
- Planning Practice Guidance for Renewable and Low Carbon Energy (issued 2015, last updated 2023).

Since publication of ETSU-R-97, the UK Government has undertaken a review and update of national guidance for the assessment of operational wind turbine noise. This process culminated in the publication of ARWTN in June 2026, which formally supersedes ETSU-R-97 and now represents the current UK Government guidance for the assessment and control of operational wind turbine noise. Accordingly, ETSU-R-97 is no longer considered to represent the most up-to-date assessment guidance.

The IoA GPG pre-date the publication of ARWTN and therefore contain references to ETSU-R-97. The IoA has subsequently advised that these documents should continue to be used alongside ARWTN pending publication of updated guidance. Where any differences in terminology or interpretation arise, ARWTN, as the current Government guidance, will take precedence.

## 12.3 Baseline Conditions and Key Sensitivities

This section outlines the known baseline conditions and key sensitivities within the study area, at the Scoping stage of the project.

### 12.3.1 Study Area

The Proposed Development is within a rural location. There are numerous residential properties scattered around the Proposed Development, largely to the north and east,

with the closest settlement located to the north in the hamlet of Beck Houses. Noise sensitive receptors (NSRs) have been identified at locations that have the potential to be adversely affected by noise from the Proposed Development. This primarily includes residential dwellings but is extended to other buildings with residential elements. The closest noise sensitive receptors are located to the north, east, and south of the Proposed Development. Two financially involved properties (Big Park Farm and Lambrigg Park Farm) are located adjacent to the Site boundary (see **Figure 12.1 Noise Sensitive Receptors**).

The construction and decommissioning noise study areas are likely to be initially restricted to 300 m from construction and decommissioning activities, including the cable corridor and access route areas, aligning to the guiding principles of BS 5228-1. However, it is recognised that many construction activities are likely to occur in rural areas where background levels are low and it may be relevant to extend this Study Area to 1 km, subject to the likelihood of potential impacts.

The operational noise assessment of the substation and associated infrastructure is likely to be limited to 2 km from the proposed substation site. While BS 4142 does not specifically stipulate this area, it is a commonly adopted practice to use this definition within the assessment of a substation site.

The operational wind turbine noise assessment will broadly align to the calculated 35 dB(A)  $L_{90}$  contour of the development, combined with the area expected to be potentially affected by developments, which is stipulated in the IoA GPG as the following:

*"If the proposed wind farm produces noise levels within 10 dB of any existing wind farm/s at the same receptor location, then a cumulative noise impact assessment is necessary. Equally, in such cases where noise from the proposed wind farm is predicted to be 10 dB greater than that from the existing wind farm (but compliant with ETSU-R-97 in its own right), then a cumulative noise impact assessment would not be necessary."*

There is one operational wind farm development (Armistead Wind Farm) within approximately 10 km or less of the proposed Site boundary, as shown in **Figure 12.1 Noise Sensitive Receptors**. Armistead Wind Farm has six 100 m tip height turbines, is 7 km south of the Site boundary, and is shown in **Figure 12.2**. These study areas are still being refined, and the noise EIA Chapter will consider cumulative noise effects as relevant.

The existing Lambrigg Wind Farm will be decommissioned as part of the construction of the Proposed Development and will not be included in the assessment of Cumulative Effects.

### 12.3.2 Approach to the Collection of Baseline Data

Preliminary noise modelling was undertaken using Datakustik's CadnaA software. The proposed turbine layout was used alongside candidate turbine noise data to produce a noise contour plot. An initial set of NSRs have been identified within the 35 dB(A) L<sub>90</sub> contour. This selection was undertaken via a detailed review of aerial photography combined with AddressBase information. These NSRs are presented in **Figure 12.1**.

The list of NSRs may change subject to improved understanding of the local environment during the life cycle of the assessment, and changes in the design yielding changes to the study area.

Background noise monitoring will be undertaken to derive the Total Noise Assessment Criteria (TNAC). Data will be recorded in continuous 10-minute intervals, using the LA<sub>90,10-min</sub> noise index, until enough measurements have been recorded. Concurrent rain data will be recorded with rain buckets placed alongside noise monitoring equipment. Survey locations will be discussed with Westmorland and Furness Council, who will be invited to witness installation of the equipment where reasonably practicable.

Concurrent wind speed and wind direction data will be recorded using a LiDAR system, weather station, or other appropriate unit. Weather data will be averaged over the same 10-minute intervals and for the same period as the noise data.

Analysis of the measured data will be undertaken in accordance with the recommendations in ARWTN and the IoA GPG to determine the background noise levels for the operational turbine noise assessment.

Weather data will be analysed and where rainfall has occurred the corresponding noise data will be excluded from the assessment. Guidance in ARWTN and the IoA GPG will be used to determine the sufficiency of measured data.

The baseline sound levels for the operational noise assessment of the substation and associated infrastructure will be determined using the same dataset, but in accordance with BS 4142.

## 12.4 Potential Impacts and Effects

There is potential for impact at NSRs, for both operational and construction phases of the Proposed Development. Moreover, any quantified impact will be inclusive of the cumulative effect of neighbouring developments where appropriate.

### 12.4.1 Effects Scoped Out

This section details effects scoped out of the assessment including a literature review of relevant and applicable documentation.

#### 12.4.1.1 Infrasound and Low-Frequency Noise

Infrasound from wind turbines: Infrasound refers to sound at frequencies below 20 Hz. The recommendation in ARWTN is that infrasound should be scoped out of the assessment:

*"Research has shown that, for modern upwind turbines (i.e. turbines where the rotor is positioned upwind of the tower when in operation), the levels of infrasound at typical receptor distances are well below the threshold of perception. The scoping review<sup>198</sup> (p. 114) concluded that 'the findings from the existing evidence base indicate that infrasound from wind turbines at typical exposure levels has no direct adverse effects on physical or mental health'."*

Therefore, it is not proposed to undertake a specific assessment of infrasound;

Low frequency noise from wind turbines: low frequency noise refers to sound occurring predominantly in the frequency range from approximately 20 to 200 Hz. The recommendation in ARWTN is that low frequency noise should be scoped out of the assessment:

*"Noise-sensitive receptors are considered to be suitably protected from low frequency sound by the proposed noise criteria (which are based on A-weighted noise levels). In the absence of specific low frequency tonal noise (which is covered by the tonal assessment methodology), no specific low frequency limits are necessary to control wind turbine noise."*

Therefore, it is not proposed to undertake a specific assessment of low frequency noise.

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<sup>198</sup> WSP for the Department for Business, Energy & Industrial Strategy (2022), A review of noise guidance for onshore wind turbines, report reference 70081416 001 03 03.

### 12.4.1.2 Amplitude Modulation

Amplitude Modulation (AM): The noise assessment methodology presented in ARWTN, sets out noise limits which already account for likely encountered levels of AM (sometimes referred to as 'blade swish') from wind turbines. UK research found a small number of wind farms in the UK that exhibited a greater degree of fluctuation than normal for limited periods of time. Further research on the subject defined 'other AM' (OAM) to classify these characteristics and others. Whilst research is extensive and ongoing, an agreed good practice method for the measurement of AM, including a penalty scheme, has been issued by the Institute of Acoustics; however, AM cannot be measured or predicted in advance of the operation of the wind farm. Therefore, it is not possible to assess AM at the planning stage.

### 12.4.1.3 Operational Vibration

The recommendation in ARWTN is that ground-borne vibration should be scoped out of the assessment:

*"Levels of ground-borne vibration from modern upwind turbines are very low and, although ground-borne vibration from wind turbines can be measured at large distances using sensitive equipment, these levels are significantly below the human perception threshold and therefore do not result in adverse effects on human receptors".*

It is therefore proposed to scope out the assessment of vibration produced during the operation of the Proposed Development.

### 12.4.1.4 Construction and Decommissioning Vibration

A specific assessment of construction and decommissioning vibration would not be considered necessary as vibration inducing activities such as piling or compacting are not expected to take place in proximity of NSRs. Hence this effect should be scoped out of the noise EIA chapter.

Nonetheless vibration limits should be adhered to at residential properties to ensure no adverse vibration effects. These limits are outlined in BS 5228:2009+A1:2014: Part 2 Vibration and will be detailed in a Construction Environmental Management Plan.

### 12.4.1.5 Operational Cable Route Noise

A specific assessment of operational cable route noise would not be considered necessary as the cable is not anticipated to generate significant noise. Hence this effect should be scoped out of the noise EIA chapter.

#### 12.4.1.6 Operational Traffic Noise

A specific assessment of operational traffic noise would not be considered necessary as road traffic commuting to and from the Proposed Development is expected to be minimal. Hence this effect should be scoped out of the noise EIA chapter.

### 12.4.2 Effects Scoped In

This section details effects scoped into the assessment due to the potential for impact at NSRs.

#### 12.4.2.1 Construction and Decommissioning Noise

A specific assessment of construction and decommissioning noise will be undertaken to assess the potential noise impact at NSRs during the construction and decommissioning phases of the Proposed Development, including traffic and cable route construction noise where applicable.

It is expected that information on decommissioning will be limited during the preparation of the noise EIA chapter. It is expected that the conclusions of the decommissioning noise assessment will align with the conclusions of the construction noise assessment on the basis that the impacts will be no worse.

#### 12.4.2.2 Wind turbine and Substation Operational Noise

A specific assessment of operational noise from the Proposed Development will be undertaken to assess the potential noise impact at NSRs, specifically associated with the operation of wind turbines, substation, and associated infrastructure. This assessment will include potential impact from cumulative effects.

## 12.5 Proposed Assessment Methodology

This section details the assessment methodology for the effects scoped in.

### 12.5.1 Construction and Decommissioning

The construction noise assessment will be undertaken according to the guidance outlined in BS 5228-1. The prediction of construction noise levels will be undertaken using the calculation methodologies presented in BS 5228-1 and ISO 9613-2:2024, depending on the relevance, together with published noise data for assumed construction plant.

To undertake an assessment of the construction noise impact, the following steps will be undertaken:

- Identification of NSRs near potential construction activities and if appropriate select representative construction noise assessment locations;
- Identification of the applicable threshold of significant effects from BS 5228-1;
- Calculation of receptor noise levels for various construction noise activities;
- Comparison of predicted noise levels against the applicable threshold;
- Where necessary, develop suitable mitigation measures to minimise any significant effects during the construction stage; and
- If required, assess any residual effects taking into account any identified mitigation measures.

At the Scoping stage the cable corridor and access route areas are still being refined, though it is expected the amount of required plant will be relatively minor.

Construction activities in any one location will be limited in duration, and adverse noise effects are anticipated to be negligible. Where the cable route interfaces watercourses, culverts or drains there may be a requirement for trenchless crossings.

### 12.5.2 Operation and Maintenance

The wind farm operational noise assessment will be undertaken according to the guidance outlined in ARWTN and the IoA GPG which detail a methodology to establish assessment criteria and noise limits for proposed wind farm developments. ARWTN states that TNAC is determined as the greater of a Lower Limiting Value (LLV) or 5 dB above typical background noise levels are representative NSRs and that these criteria should reflect the variation in both turbine source noise and background noise with wind speed.

Separate noise limits apply for daytime and for night-time periods. Daytime limits are chosen to protect a property's external amenity, and night-time limits are chosen to prevent sleep disturbance indoors, with windows open.

The noise assessment for the Proposed Development will be undertaken in the following stages:

- Determination of the 'Total ARWTN Noise Limits' which are applicable to the operation of all developments in the area;
- Undertaking of a cumulative assessment to determine whether predictions from all cumulative developments meet the total ARWTN Noise Limits;
- Deriving a set of 'Site-Specific Noise Limits'; and
- Undertaking predictions to determine whether the Proposed Development can operate within the Site-Specific Noise Limits.

ARWTN recommends that wind farm noise for the daytime periods should be limited to whichever is highest between 5 dB above the prevailing background noise level or a fixed minimum level within the range 35 – 40 dB  $L_{A90}$ . For the latter, choosing a noise limit within the range 35 – 40 dB  $L_{A90}$  depends on several factors, including the number of dwellings in the neighbourhood of the wind farm, the effect of noise limits on the number of kWh generated (larger sites tend to suggest a higher figure) and the duration and level of exposure to any noise. These factors will be considered and a justification for deriving suitable noise limits will be included in the noise assessment.

Where a property occupier has a financial involvement with the Proposed Development, there is an exception to the fixed minimum limits. In that case the fixed minimum limit can be increased to 45 dB(A)  $L_{90}$  or 5 dB above the prevailing background noise level, whichever is the greater. This is applicable to both the daytime and night-time periods.

The guidance outlined in the IoA GPG will be used to establish suitable Site-Specific Noise Limits which account for the proportion of Total ARWTN Noise Limits already allocated to existing operational and consented wind farms in the area. The noise assessment will include predictions of likely wind turbine noise levels across a range of wind speeds to demonstrate compliance with the Total ARWTN and Site-Specific Noise Limits.

Detailed consultation will be undertaken with the Environmental Health Department of Westmorland and Furness Council on the overall assessment methodology. As the design is refined and the cable corridors become clear, consultation will be undertaken with any other Councils that may interface the cable route. Existing, consented, and proposed cumulative developments will be agreed with the relevant local planning authorities prior to undertaking the assessment. The outcome of the cumulative effects assessment will be reported within the Noise EIA Chapter.

The substation and associated infrastructure operational noise assessment will be undertaken according to the guidance outlined in BS 4142. BS 4142 outlines guidance on the assessment of industrial and commercial noise, according to the difference between the background sound level and rating level at NSRs.

The rating level is derived from the specific sound level at a NSR, with appropriate character correction penalties considered where appropriate, character corrections include tonal elements, impulsivity, intermittency and distinctiveness. This level is assessed against the existing background sound level at each NSR to determine the likely effect level. Context has a significant role in determining the final assessment of significance in a BS 4142 assessment. For situations where the background noise is

very low, it may be appropriate to draw on guidance in BS 8233 to conclude a final assessment of significance.

### 12.5.3 Assumptions, Uncertainty and Limitations

An indicative layout and candidate turbine have been used to inform this Scoping Report, including predicted noise levels and the identification of NSRs, and it is anticipated that these could differ from the candidate turbine and layout submitted with the application. Additionally, the design of the substation and cable route(s) considered in this Scoping Report are also indicative and will be subject to change. Existing, consented, and proposed cumulative developments will be agreed with the relevant local planning authorities prior to undertaking the assessment. The outcome of the cumulative effects assessment will be reported within the noise EIA chapter.

## 12.6 Mitigation

Consideration will be paid to the opportunity to introduce environmental measures and mitigation that will help to avoid or reduce the potential for an adverse significant effect to occur, in line with the first and second aims of the NPSE. Specific environmental measures relevant to noise will be identified and will be considered as part of the assessment.

### 12.6.1 Construction and Decommissioning

It is anticipated that a range of good practice measures will be detailed in a Construction Environmental Management Plan (CEMP) and employed to minimise noise effects. Good onsite construction practices will be implemented to minimise the likely effects. Section 8 of BS 5228-1 recommends a number of simple control measures that may be employed on site to minimise construction noise effects, summarised in the following:

- Keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern;
- Ensure that any extraordinary site work continuing throughout 24 hours of a day (for example, crane operations lifting components onto the tower) will be programmed, when appropriate, so that haulage vehicles would not arrive at or leave the Site between 19:00 and 07:00, with the exception of abnormal loads that would be scheduled to avoid significant traffic flows;
- Ensure all vehicles and mechanical plant are fitted with effective exhaust silencers and be subject to programmed maintenance;

- Select inherently quiet plant where appropriate - all major compressors will be 'sound reduced' models fitted with properly lined and sealed acoustic covers, which would be kept closed whenever the machines are in use;
- Ensure all ancillary pneumatic percussive tools are fitted with mufflers or silencers of the type recommended by the manufacturers;
- Instruct that machines will be shut down between work periods or throttled down to a minimum;
- Regularly maintain all equipment used on-site, including maintenance related to noise emissions;
- Ensure that vehicles are loaded carefully to ensure minimal drop heights so as to minimise noise during this operation;
- Ensure all ancillary plant such as generators and pumps will be positioned so as to cause minimum noise disturbance and if necessary, temporary acoustic screens or enclosures provided; and,
- In addition to the above, all mobile plant will be fitted with directional white noise reversing alarms, which allows alarm noise produced by reversing vehicles, for example, to dissipate quicker and be focused within the danger zone, as opposed to tonal reversing alarms which cover a broader area and dissipate more slowly.

### 12.6.2 Operation and maintenance

To ensure compliance with the noise limits during the operation of the Proposed Development, appropriate noise controls within an outline Operational Environmental Management Plan (oOEMP) will be considered where appropriate. Indicative mitigation measures may include the operation of some wind turbines in alternative 'low noise' operational modes under specific wind conditions. Good site practices, as described for the construction phase, will be applied to minimise noise impacts during the decommissioning phase.

## 12.7 Proposed Scope of EIA Chapter

Table 12.1 Noise and Vibration Factors to be Scoped Out of the Assessment

| Environmental Receptor, Assessment or Effect | Rationale                                                                                                                                                                                                                                       |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Infrasound                                   | Infrasound from the Proposed Development is likely to be low or imperceptible, and therefore there is no potential for significant effects.                                                                                                     |
| Low frequency noise                          | Low frequency noise from the Proposed Development is likely to be low or imperceptible, and therefore there is no potential for significant effects.                                                                                            |
| Amplitude modulation                         | Amplitude Modulation cannot be reliably predicted at the planning stage and therefore cannot be meaningfully assessed at this stage; however, any future operational noise issues would be controlled through planning conditions/requirements. |
| Operational vibration                        | Vibration from the wind turbine generators is likely to be imperceptible, and therefore there is no potential for significant effects.                                                                                                          |
| Construction and decommissioning vibration   | Vibration inducing activities such as piling or compacting are not expected to take place in proximity of noise sensitive receptors.                                                                                                            |
| Operational cable route noise                | The cable is not anticipated to generate significant noise.                                                                                                                                                                                     |
| Operational traffic noise                    | Road traffic commuting to and from the Proposed Development is expected to be minimal.                                                                                                                                                          |

Table 12.2 Noise and Vibration Factors to be Scoped In to the Assessment

| Environmental Receptor, Assessment or Effect | Rationale                                                                                                                                                                                                                               |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction and decommissioning noise       | Construction noise will be assessed for the potential effects during the construction phase of the Proposed Development, including construction traffic and where applicable noise associated with the construction of the cable route. |
| Operational wind farm and substation noise   | Operational noise from the wind farm and substation will be assessed for the potential effects during the operational phase of the Proposed Development.                                                                                |

## 12.8 Consultation and Scoping Questions

Consultation will take place with Westmorland and Furness Council.

Key questions for consultees are:

- Q12.1 - Can the consultees confirm that they agree with the proposed assessment methodologies, specifically the use of ARWTN and the IoA GPG to assess operational wind turbine noise, BS 4142 to assess substation operational noise, and BS 5228-1 to assess construction noise?
- Q12.2 - Can the consultees agree that assessment of infrasound, low frequency noise, amplitude modulation, vibration, decommissioning, cable route and traffic noise be scoped out of the EIA?
- Q12.3 - Can the consultees confirm the list of relevant existing, consented, and proposed cumulative developments?
- Q12.4 - Are the consultees aware of any relevant policies or guidance documents not specifically mentioned in this section of the Report?

# 13. Socio-economics and Tourism

## 13.1 Introduction

This section of the Scoping Report presents the proposed scope and methodology for the assessment of socio-economic, tourism, and recreation effects associated with the Proposed Development, including effects on jobs and Gross Value Added (GVA), wider socio-economic effects for key sectors of the local economy, socio-cultural effects for local communities, and effects on tourism and recreation.

At this stage, impacts arising from the construction, operation and decommissioning of the Proposed Development on socio-economic, tourism and recreation receptors are expected to be relatively small and unlikely to result in significant effects. It has therefore been determined that socio-economics, tourism and recreational effects will be scoped out of the EIA Report. A proportionate assessment of these effects will instead be presented in a standalone Socio-economic Statement (SES), which will be submitted as part of the suite of documentation supporting the planning application. Should the SES identify any adverse effects that could be significant, these will be considered further within the EIA Report.

## 13.2 Legislation, Policy and Guidance

The scope of the socio-economic assessment proposed SES is based upon the following policies at the national and local level, and on relevant published guidance.

### 13.2.1 National Policy Statement (NPS)

The Overarching National Policy Statement for Energy (EN-1)<sup>199</sup> sets out the national policy for energy infrastructure. Section 5.13 identifies the socio-economic impacts that should be considered. These include:

- the creation of jobs and training opportunities;
- the contribution to the development of low-carbon industries at the local and regional level as well as nationally;
- the provision of additional local services and improvements to local infrastructure;

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<sup>199</sup> Department for Energy Security and Net Zero (2026), Overarching National Policy Statement for Energy (EN-1), 2025. Online. Available at: <https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1-2025> (Accessed July 2026)

- any indirect beneficial impacts for the region hosting the infrastructure;
- effects on tourism and other users of the area;
- the impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure; and
- cumulative effects.

### 13.2.2 National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and provides a framework for sustainable development planning<sup>200</sup>. The NPPF has three overarching objectives: an economic objective, a social objective, and an environmental objective. The economic objective focuses on building a strong, responsive and competitive economy, including by identifying and coordinating the provision of infrastructure. The social objective focuses on supporting strong, vibrant and healthy communities.

### 13.2.3 South Lakeland Local Development Framework Core Strategy

Westmorland and Furness Council is preparing a new Local Plan for Westmorland and Furness (excluding the National Parks) which, once adopted, will replace existing Local Plans adopted by the former Councils.

The South Lakeland Local Development Framework Core Strategy<sup>201</sup> was adopted in 2010 and sets out the development strategy for South Lakeland, outside the National Parks, for the period to 2025. The Core Strategy places a strong emphasis on growing the economy in a sustainable way, including supporting local businesses, attracting inward investment, and helping to diversify the rural economy. It recognises that tourism is a key part of the local economy, but that jobs in the sector often have low pay.

The following policies are relevant to socio-economics, tourism and recreation:

- Policy CS7.1 – Meeting the employment requirement;
- Policy CS7.3 – Education and skills;
- Policy CS7.7 – Opportunities provided by energy and the low carbon economy; and
- Policy CS8.3a – Accessing open space, sport and recreation.

200 MHCLG (2026) National Planning Policy Framework. Online. Available at:

[https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF\\_December\\_2024.pdf](https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf) (Accessed July 2026)

201 South Lakeland District Council (2010) South Lakeland Local Development Framework: Core Strategy. Online. Available at:

<https://www.southlakeland.gov.uk/media/3521/cs01-core-strategy-october-2010.pdf> (Accessed July 2026)

### 13.2.4 Westmorland and Furness Inclusive and Green Economic Growth Strategy, 2026-35

The Westmorland and Furness Inclusive and Green Economic Growth Strategy 2026-2035<sup>202</sup> sets a comprehensive framework for sustainable, inclusive and prosperous economic growth, aligned with the overarching Cumbria Economic Strategy. Energy generation and storage and the visitor economy are identified as existing core strengths of the local economy, and the green economy, including renewable energy, as an emerging opportunity sector.

### 13.2.5 Guidance

There are no legislative requirements which dictate the form of socio-economic assessment. Therefore, the approach and methodology will be informed by established industry good practice, feedback from stakeholders, and published guidance. Relevant guidance includes:

- Institute of Sustainability and Environmental Professionals (ISEP) (formerly IEMA) (2025), Social Impact Assessment in Environmental Impact Assessment in the UK and Ireland<sup>203</sup>. This provides guidance on scoping and assessing social impacts, including developing the baseline, defining appropriate significance criteria, and identifying mitigation.
- HM Treasury (2026), The Green Book: UK Government Guidance on Appraisal<sup>204</sup>. Green Book principles are applied to the methodology for assessing socio-economic impacts.

## 13.3 Study Area

Socio-economic impacts are likely to occur at different spatial scales, depending on the location of receptors that could be directly or indirectly impacted, and the type of impacts that could occur, explained in more detail in **Section 13.6**, and visualised in **Figure 13.1**. The SES will consider socio-economic impacts at the following spatial levels:

- Socio-economic impacts on jobs and GVA will be considered for a Local Study Area comprising Westmorland and Furness, and a National Study Area of England.

202 Westmorland and Furness Council (2016) Westmorland and Furness Inclusive and Green Economic Growth Strategy, 2026-35. Online. Available at: <https://westmorlandandfurness.moderngov.co.uk/documents/s37740/Appendix%201%20for%20CAB%201703%20-%20Westmorland%20and%20Furness%20Economic%20Strategy.pdf> (Accessed July 2026)

203 ISEP (2025), Social Impact Assessment in Environmental Impact Assessment in the UK. Available online at: <https://shop.isepglobal.org/products/social-impact-assessment-in-environmental-impact-assessment-in-the-uk?srsltid=AfmBOoTz0knJb18SFuUNscZgReXmPhzSjGqg35bMXe3eczXca2tncCc> (Accessed July 2026)

204 HMTreasury (2026) The Green Book. Online. Available at: <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government> (Accessed July 2026)

- Wider socio-economic and socio-cultural effects will be considered for a Neighbourhood Study Area comprising the ward of Sedbergh and Kirkby Lonsdale, and a Local Study Area comprising Westmorland and Furness.
- Direct impacts on Public Rights of Way (PRoW), promoted recreational routes, and land use could occur within the Site. There could also be the potential for indirect impacts on PRoW, promoted recreational routes, and other tourism and recreation receptors, such as changes in amenity or disruption to access, over a wider area. The SES will therefore considers the land within the Site plus a buffer of 5 km in which indirect impacts would be most likely to arise.

The proposed Study Areas are summarised in **Table 13.1** for each category of impact included in the scope of the SES.

**Table 13.1: Proposed Study Areas**

|                                                 | Site | Site plus 5 km | Neighbour-<br>hood Study<br>Area | Local Study<br>Area | National Study<br>Area |
|-------------------------------------------------|------|----------------|----------------------------------|---------------------|------------------------|
| Socio-economic                                  |      |                |                                  | ✓                   | ✓                      |
| Wider socio-economic                            |      |                | ✓                                | ✓                   |                        |
| Socio-cultural                                  |      |                | ✓                                | ✓                   |                        |
| PRoW,<br>tourism and<br>recreation<br>receptors | ✓    | ✓              |                                  |                     |                        |
| Land use                                        | ✓    |                |                                  |                     |                        |

## 13.4 Baseline Conditions and Key Sensitivities

The following data sources were used to identify the key receptors and baseline characteristics of the neighbourhood, local and national study areas:

- Office for National Statistics (ONS) Census, 2021<sup>205</sup>;
- ONS Annual Population Survey (APS), 2026<sup>206</sup>;
- ONS Business Register and Employment Survey (BRES), 2024<sup>207</sup>;

205 ONS (2021). Census. Online. Available at: <https://www.ons.gov.uk/census> (Accessed July 2026)

206 ONS (2025). Annual Population Survey (APS). Online. Available at: <https://www.ons.gov.uk/census> (Accessed July 2026)

207 ONS (2025). Business Register and Employment Survey (BRES). Online. Available at: <https://www.ons.gov.uk/census> (Accessed July 2026)

- ONS Mid-Year Population Estimates, 2024 and 2025<sup>208</sup>;
- ONS GVA by Industry<sup>209</sup> and GVA per Hour Worked<sup>210</sup>, 2025;
- Index of Multiple Deprivation (IMD), 2025<sup>211</sup>;
- Defra, Structure of the agricultural industry in England and the UK, 2026;
- Natural England, Regional Agricultural Land Classification Maps, 2024;
- VisitEngland, Annual Attractions Full Admissions Listings, 2024;
- VisitEngland, Accommodation Stock Audit, 2026; and
- Cumbria Tourism Research, 2025.

The datasets provide insights into population characteristics, labour market structure and relative deprivation. Assessing these sources led to the identification of key sectors and vulnerable groups and their potential of being affected by the Proposed Development.

The latest data available has been used for each dataset. Baseline datasets are not always available at the spatial level defined for each study area. Where data predates the formation of Westmorland and Furness Council in 2023, data is instead provided for the former Council areas of South Lakeland, Eden, and Barrow-in-Furness.

### 13.4.1 Socio-economic Conditions

Data from the APS shows that, in the year to March 2026, the Local Study Area (Westmorland and Furness) recorded higher levels of economic activity (82.2%) and employment (80.4%) among the working-age population compared with national averages (79.5% and 75.8%, respectively). The unemployment rate was low at 2.1%, substantially below the national rate of 4.7%<sup>212</sup>.

While economic inactivity in the Local Study Area (17.8%) was slightly lower than the national level (20.5%), the reasons for inactivity differ, with a markedly higher proportion of economically inactive residents classified as long-term sick (46.3%, compared with 28.0% nationally) and retired (25.0%, compared with 11.7% nationally).

208 ONS (2024, 2025). Mid-year Population Estimates. Online. Available at: <https://www.ons.gov.uk/census> (Accessed July 2026)

209 ONS (2025). Regional gross value added by industry. Online. Available at:

<https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/regionalgrossvalueaddedbalancedbyindustrylocalauthoritiesbyitl1region> (Accessed July 2026)

210 ONS (2025). Gross value added per hour worked. Online. Available at: <https://www.ons.gov.uk/explore-local-statistics/indicators/gross-value-added-per-hour-worked> (Accessed July 2026)

211 MHCLG (2025). Index of Multiple Deprivation. Online. Available at:

<https://www.gov.uk/government/statistics/english-indices-of-deprivation-2025> (Accessed July 2026)

212 ONS (2026). APS.

By contrast, lower proportions of economic inactivity are associated with students and those looking after family or home relative to national averages<sup>213</sup>.

The total economic contribution of the Local Study Area, measured in GVA, was approximately £7 bn<sup>214</sup>. Productivity levels, measured as GVA per hour worked, are broadly comparable with national performance, at £41.40 per hour worked compared with the national average of £42.40 per hour worked<sup>215</sup>.

### 13.4.2 Wider Socio-economic Conditions

The economic structure of the Neighbourhood Study Area and the Local Study Area by sector shows a distinct sectoral profile relative to the national economy. Data from BRES shows that, within the Neighbourhood Study Area, there is a very high concentration of employment in:

- Education, which accounts for 35.7% of jobs and has a location quotient<sup>216</sup> of 3.9 relative to the national average.
- Construction employment accounting for 10.0% of total employment compared with 5.0% nationally, with a location quotient of 1.8<sup>217</sup>.

Within the Local Study Area there are concentrations of employment in:

- Manufacturing, which accounts for 16.4% of total employment, more than double the national share (7.0%), with a location quotient of 2.3 indicating a concentration of employment in this sector relative to the national average.
- Agriculture is also an important sector locally, accounting for 6.0% of employment compared with 1.2% nationally, with a location quotient of 5.1.
- The mining and quarrying, and electricity, gas, steam and air conditioning supply sectors account for relatively small proportions of employment in the Local Study Area but have high location quotients (4.2 and 2.4 respectively).
- Accommodation and food service activities are more prominent than nationally in both the Neighbourhood Study Area (14.3%; location quotient 1.7) and the Local Study Area (15.5%; location quotient 2.0), representing the importance of the tourism sector within the local economy<sup>218</sup>.

Employment in professional, scientific and technical activities, administrative and support services, financial and insurance, and information and communication is also

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213 ONS (2026). APS.

214 ONS (2025). Regional gross value added by industry.

215 ONS (2025). Gross value added per hour worked.

216 Location quotients measure the relative concentration of an industry in a particular location. A location quotient greater than 1 indicates a higher concentration of a particular industry than the national average.

217 ONS (2025). BRES.

218 ONS (2025). BRES.

under-represented relative to national levels across both the Neighbourhood Study Area and Local Study Area, suggesting a sectoral structure that is less weighted towards service-based sectors than the national economy.

### 13.4.3 Socio-cultural Conditions

Data from the ONS mid-year population estimates for 2024 shows that the Neighbourhood Study Area has a resident population of approximately 8,074 people, characterised by a relatively dispersed settlement pattern comprising small towns and rural communities including Sedbergh and Kirkby Lonsdale. Local authority level data is available for 2025 and shows that the Local Study Area of Westmorland and Furness has a resident population of approximately 231,307 people. Major settlements include Kendal and Barrow-in-Furness<sup>219</sup>. Census data shows that the Neighbourhood and Local Study Areas both have a higher-than-average proportion of households living in owner-occupied housing, and lower than average proportions of households in social rented or private rented housing<sup>220</sup>.

The age profile of both the Neighbourhood and Local Study Area indicates an older population structure relative to the national average. Residents aged 65 and over account for 29.0% of the Neighbourhood Study Area population and 27.1% of the Local Study Area population, compared with 19.1% nationally. The proportion of working-age residents (aged 16–64) is 55.5% in the Neighbourhood Study Area and 58.4% in the Local Study Area, lower than the national average of 63.0%<sup>221</sup>.

Data from the English Indices of Deprivation<sup>222</sup> shows that the Neighbourhood Study Area is an area of generally low deprivation, with most Lower Super Output Areas (LSOAs) falling within the 50% least deprived in England. In the Local Study Area, there are pockets of higher multiple deprivation, particularly in Barrow-in-Furness. The LSOA of Barrow-in-Furness 010B is more deprived than 99% of LSOAs in England overall, and in relation to employment and health and disability deprivation. These data are visualised in **Figure 13.2**.

### 13.4.4 Tourism and Recreation

As noted in **Section 13.4.2**, tourism is an important component of the economy of Westmorland and Furness, reflecting its location within Cumbria and proximity to nationally important tourism destinations. Parts of the Lake District National Park and the Yorkshire Dales National Park are within the local authority boundary. Tourism is

<sup>219</sup> ONS (2025). Mid-year Population Estimates.

<sup>220</sup> ONS (2021). Census.

<sup>221</sup> ONS (2024). Mid-year Population Estimates.

<sup>222</sup> Ministry of Housing, Communities and Local Government (2025), English Indices of Multiple Deprivation. Online. Available at: <https://deprivation.communities.gov.uk/> (Accessed July 2026)

identified as a priority sector within Westmorland and Furness Council's Inclusive and Green Economic Growth Strategy<sup>223</sup>.

Scarborough Tourism Economic Activity Monitor (STEAM) data<sup>224</sup> indicates that Cumbria received over 41 million visitors in 2024, who generated approximately £4.6 billion in visitor spend. Around £2 bn of this was generated in the South Lakeland area, with a further £646.8m in Eden and £173 m in Barrow-in-Furness. Across Cumbria as a whole, the tourism sector supported around 43,514 full-time equivalent (FTE) jobs. Overall visitor numbers remain around 14% below 2019 levels, reflecting the long-term impacts of the Covid-19 pandemic on tourist behaviour.

Tourism attractions within the Local Study Area are generally concentrated within the Lake District National Park. Attractions that typically receive 50,000 or more visitors each year include:

- Windermere Lake Cruises;
- Sizergh Castle and Garden;
- Forestry England Grizedale;
- Hill Top; and
- Lakeland Motor Museum<sup>225</sup>.

Tourism and recreation receptors within 5 km of the Site Boundary include a number of accommodation providers, nature reserves, walking routes, and viewpoints. Parts of the Lake District National Park and the Yorkshire Dales National Park fall within the 5 km buffer.

**Table 13.2** presents data from the most recent tourism accommodation stock audit for England, which shows that, in June 2026, there was a total of 27,068 tourist bedspaces in 840 properties across Westmorland and Furness<sup>226</sup>. There were a further 7,337 properties in the short-term lets sector<sup>227</sup>.

223 Westmorland and Furness Council (2026), Inclusive and Green Economic Growth Strategy 2026–2035. Online. Available at: <https://westmorlandandfurness.moderngov.co.uk/documents/s37740/Appendix%201%20for%20CAB%201703%20-%20Westmorland%20and%20Furness%20Economic%20Strategy.pdf> (Accessed July 2026)

224 Cumbria Tourism (2025) Research. Online. Available at: <https://www.cumbriatourism.org/resources/research/> (Accessed July 2026)

225 VisitEngland (2025) Annual Attractions Full Admissions Listings 2024. Online. Available at: <https://www.visitbritain.org/research-insights/england-visitor-attractions-latest> (Accessed July 2026)

226 VisitEngland (2026). Accommodation Stock Audit 2026: Hotels, B&Bs, Camping Data. Online. Available at: <https://www.visitbritain.org/research-insights/england-accommodation-stock-audit> (Accessed July 2026)

227 VisitEngland (2026) Accommodation Stock Audit: Data on short-term lets is provided for the legacy local authorities of Barrow-in-Furness, Eden, and South Lakeland. Online. Available at: <https://www.visitbritain.org/research-insights/england-accommodation-stock-audit> (Accessed July 2026)

Table 13.2: Tourism accommodation stock, Westmorland and Furness, 2026<sup>228</sup>

|                   | Properties / Sites | Number of rooms / pitches | Total bedspaces |
|-------------------|--------------------|---------------------------|-----------------|
| B&B / Guest House | 410                | 3,328                     | 7,488           |
| Camping Ground    | 121                | 2,832                     | N/A             |
| Hotel             | 309                | 8,702                     | 19,580          |
| <b>Total</b>      | <b>840</b>         | <b>14,863</b>             | <b>27,068</b>   |

PRoW and promoted recreational routes within 5 km of the Site Boundary are shown on **Figure 13.3**. Westmorland and Furness Bridleway 546002 is within the Site Boundary. The routes of the Dales Way and the North of England Way long-distance paths<sup>229</sup>, and National Cycle Network (NCN) routes 6, 7, and 68<sup>230</sup>, are within 5 km of the Site Boundary.

### 13.4.5 Land Use

As noted above, agriculture is an important employer in the Local Study Area. Data from the Survey of Agriculture and Horticulture shows that, in 2025, there were 2,722 farm holdings in Westmorland and Furness, employing a total labour force of 6,170. There were 261,059 hectares (ha) of land on farm holdings, the majority of which (91.8%) was grassland<sup>231</sup>.

Natural England Provision Agricultural Land Classification data shows that, within the Site boundary, the land is mostly Grade 5 agricultural land (defined as very poor quality), with a small area of Grade 4 (poor quality) in the northeast of the Site<sup>232</sup>.

## 13.5 Proposed Assessment Methodology

This section describes the methodology that will be used to assess each category of effect. As the SES will be a standalone report rather than part of the EIA Report, the assessment will not seek to assess the significance of effects and will not assign

228 VisitEngland (2026). Accommodation Stock Audit 2026: Hotels, B&Bs, Camping Data. Online. Available at:

<https://www.visitbritain.org/research-insights/england-accommodation-stock-audit> (Accessed July 2026)

229 Long Distance Walkers Association (LDWA) (2022). Long Distance Paths. Online. Available at:

[https://ldwa.org.uk/ldp/members/search\\_by\\_path.php](https://ldwa.org.uk/ldp/members/search_by_path.php) (Accessed July 2026)

230 Walk Wheel Cycle Trust (2026). National Cycle Network. Online. Available at: <https://www.walkwheelcycletrust.org.uk/national-cycle-network/> (Accessed July 2026)

231 Defra (2026). Structure of the agricultural industry in England and the UK at June. Online. Available at:

<https://www.gov.uk/government/statistical-data-sets/structure-of-the-agricultural-industry-in-england-and-the-uk-at-june> (Accessed July 2026)

232 Natural England (2024), Regional Agricultural Land Classification Maps. Online. Available at:

<https://publications.naturalengland.org.uk/category/5954148537204736> (Accessed July 2026)

sensitivity and magnitude criteria. It will draw on the findings of relevant chapters of the EIA Report where appropriate.

### 13.5.1 Socio-Economic Effects

An economic model will be built to estimate the jobs and GVA associated with the construction and operation and maintenance phases of the Proposed Development. The model will be based on the estimated capital expenditure (CAPEX) and operational expenditure (OPEX) for the Proposed Development and will apply industry standard good practice to estimate the direct, indirect, and induced effects of construction and operation on the local (Westmorland and Furness) and national (England) economy.

### 13.5.2 Wider Socio-Economic Effects

Wider socio-economic effects, such as structural economic change or disruption to established local industries, will be assessed based on the findings of the economic assessment. It will also consider baseline data in relation to the structure of the local economy, its existing strengths and growth areas.

### 13.5.3 Socio-Cultural Effects

The assessment of socio-cultural effects will consider the potential effects on local demographics associated with an incoming construction workforce, and the effect on local service provision and availability from any increase in demand. The assessment will be qualitative and will consider the size of the estimated workforce and baseline data relating to the age profile of the population and existing service provision.

### 13.5.4 Tourism and Recreation

The assessment of direct effects on tourism and recreation receptors, such as disruption to PRoW, will be based on the design of the Proposed Development and the findings of the traffic and transport chapter of the EIA Report. The assessment of indirect effects on tourism and recreation receptors will consider the potential for significant effects identified in the traffic and transport, noise, and landscape and visual chapters of the EIA Report to result in combined effects on amenity and changes in tourism and recreation activity for users of tourism and recreation receptors within 5 km of the Site. The assessment will also consider the potential increase in demand for accommodation from an incoming workforce during construction.

## 13.6 Potential Significant Impacts and Effects

As noted in **Section 13.1**, it is not expected at this stage that there will be any likely significant effects on socio-economic, tourism and recreation receptors.

The SES will consider the following categories of effects that could occur from the construction and operation of the Proposed Development:

- Socio-economic effects such as employment and GVA:
  - Employment effects (construction and operation). The construction and operation of the Proposed Development will create direct, indirect and induced jobs on site and in the supply; and
  - GVA effects (construction and operation). The construction and operation of the Proposed Development will generate direct, indirect and induced GVA in the local and national economy.
- Wider socio-economic effects (construction only). The construction of the Proposed Development could have wider and knock-on socio-economic effects including structural economic change or disruption to established local industries, for example, as a result of a temporary increase in demand for labour. It is not expected that these effects would arise during operation.;
- Socio-cultural effects (construction). Changes to local demographics and the local place associated with construction activity and the presence of an incoming construction workforce could result in increased demand for social infrastructure and changes in community identity and way of life. It is not expected that these effects would arise during operation;
- Impacts on tourism and recreation receptors (construction and operation). There could be direct impacts on tourism and recreation receptors, such as any temporary diversion of PRoW, as well as indirect effects on amenity for users of PRoW or other tourism and recreation receptors from a combination of noise, visual or traffic effects.;
- Effects on tourism accommodation (construction only). There may be an increase in demand for tourist accommodation associated with the presence of an incoming construction workforce. This could reduce the availability of accommodation for tourists in the peak season and could have benefits for accommodation providers outside the peak season. It is not expected that these effects would arise during operation.
- In relation to land use, it is expected that it will be possible for grazing to continue once the Proposed Development is in operation, and that any disruption to agricultural operations during construction would be minor and temporary.

- .

Effects from the decommissioning of the existing turbines located on the Site, and eventual decommissioning of the repowered scheme, are expected to be comparable to, or less than, those arising during construction phase. The decommissioning of existing turbines will be assessed as part of the construction phase and final decommissioning will be assessed qualitatively based on estimated construction effects.

## 13.7 Mitigation

The SES will consider embedded mitigation and mitigation measures identified in relevant topic chapters of the EIA Report, including traffic and transport, noise, and landscape and visual. It will also consider the need for any further mitigation measures to address any significant adverse effects on socio-economics, tourism and recreation, or to support the delivery of beneficial effects.

## 13.8 Proposed Scope of the EIA/ES Chapter

**Table 13.3** summarises the proposed approach to the assessment of socio-economic, tourism and recreation effects..

Table 13.3: Socio-economic, tourism and recreation factors to be scoped in or out of the assessment

| Potential effect                                    | Receptor                                         | Study Area                      | Scoped in / out | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------|--------------------------------------------------|---------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Socio-economics, Tourism and Recreation EIA Chapter | Socio-economic, tourism and recreation receptors | Neighbourhood Local<br>National | Scoped Out      | The impacts of the construction, operation and decommissioning of the Proposed Development on socio-economic, tourism and recreation receptors are expected to be relatively small and unlikely to result in significant effects. An assessment of effects on socio-economic, tourism and recreation receptors will be presented in a standalone SES to be submitted as part of the planning application. Should the SES identify any adverse effects that could be significant, these will be considered further within the EIA Report. |

## 13.9 Consultation and Scoping Questions

No direct consultation on socio-economic matters is proposed, however should consultees have specific queries regarding this subject, they will be addressed in the ES.

Questions for consultees are as follows:

- Q13.1 – Do consultees have any recommendations for additional legislation, policy and guidance that should be considered?
- Q13.2 – Are consultees content with the proposed approach to scoping out socio-economics, tourism and recreation from the EIA Report and instead providing a standalone SES?
- Q13.3 – Are consultees content with the proposed methodology, scope and study areas for the assessment of socio-economics, tourism and recreation in the SES?
- Q13.4 – Can consultees provide information of any further tourism or recreation receptors within the 5 km study area?
- Q13.5 – Do consultees have any other information that would be useful in the preparation of the SES?

# 14. Climate Change and Greenhouse Gas Emissions

## 14.1 Introduction

This chapter of the Scoping Report presents the proposed approach to the greenhouse gas (GHG) and the climate change assessments of the EIA for the Proposed Development. It sets out the proposed methodology for the assessment and identifies those impacts that can be scoped in and scoped out of the EIA.

This chapter considers the potential effects of the Proposed Development on climate from GHG emissions (the 'GHG Assessment') and the potential effects of climate change on the Proposed Development (the 'Climate Change Risk Assessment' (CCRA)). The chapter also sets out the approach to understanding the effects of climate change on other environment topics discussed in the ES (the 'In-Combination Climate Change Impact' assessment (ICCI)).

### 14.1.1 Topic Specific Regulatory Requirements

Relevant international treaties, legislation, policy and guidance that will inform the CCRA, ICCI, and GHG assessments include:

- The Kyoto Protocol<sup>233</sup>;
- The Paris Agreement<sup>234</sup>;
- The Climate Change Act 2008<sup>235</sup>;
- The Carbon Budget Orders 2011<sup>236</sup>, 2016<sup>237</sup> and 2021<sup>238</sup>;
- Schedule 4 of the EIA Regulations<sup>239</sup>; and

233 United Nations (1997). Kyoto Protocol to the United Nations Framework Convention on Climate Change. (Online) Available at: <https://unfccc.int/resource/docs/convkp/kpeng.pdf>. [Accessed March 2026].

234 United Nations (2015). Paris Agreement. (Online) Available at: [https://unfccc.int/files/meetings/paris\\_nov\\_2015/application/pdf/paris\\_agreement\\_english\\_.pdf](https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf). [Accessed March 2026]

235 UK Government (2008). Climate Change Act. (Online). Available at: Climate Change Act 2008 [Accessed March 2026]

236 UK Government (2011). The Carbon Budget Order 2011. (Online) Available at: <https://www.legislation.gov.uk/uksi/2011/1603/made>. [Accessed March 2026]

237 UK Government (2016). The Carbon Budget Order 2016. (Online) Available at: <https://www.legislation.gov.uk/uksi/2016/785/contents/made>. [Accessed March 2026].

238 UK Government (2021). The Carbon Budget Order 2021. (Online) Available at: <https://www.legislation.gov.uk/ukdsi/2021/9780348222616>. [Accessed March 2026].

239 UK Government (2017). The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. (Online). Available at: <https://www.legislation.gov.uk/id/uksi/2017/571> [Accessed March 2026]

- South Lakeland Development Framework – Core Strategy 2010<sup>240</sup>

The methodology used in the CCRA and GHG assessment will be developed in line with the following guidance:

- Institute of Environmental Management and Assessment (IEMA) (now known as the Institute of Sustainability and Environmental Professionals (ISEP)) Environmental Impact Assessment Guide: Assessing Greenhouse Gas Emissions and Evaluating the Significance<sup>241</sup>;
- IEMA Environment Impact Assessment guide to Climate Change Resilience and Adaptation 2020<sup>242</sup>;
- National Planning Policy Guidance: Flood Risk and Coastal Change (2025)<sup>243</sup>;
- ISEP's Climate Change Adaptation Practitioner Guidance (2022)<sup>244</sup>;
- GHG Protocol Second Edition: Corporate Accounting and Reporting Standard (World Resources Institute / World Business Council for Sustainable Development)<sup>245</sup>;
- UK Government's Environment Reporting Guidelines: Including streamlined energy and carbon reporting guidance (2019)<sup>246</sup>; and
- ISO14064-2 Standard<sup>247</sup>.

### 14.1.2 Baseline Conditions and Key Sensitivities

The State of the UK Climate 2025<sup>248</sup> provides the latest report on observed climate data for the UK. The climate parameters considered most relevant to the assessments

240 South Lakeland District Council (2010) South Lakeland Local Development Framework – Core Strategy. Available online at: <https://www.southlakeland.gov.uk/media/3521/cs01-core-strategy-october-2010.pdf> [Accessed March 2026]

241 Institute of Sustainability and Environmental Professionals (2022). Assessing Greenhouse Gas Emissions and Evaluating the Significance. (Online). Available at: [2022\\_iema\\_greenhouse\\_gas\\_guidance\\_eia.pdf](https://www.iema.net/media/mabhqino/iema-eia-climate-change-resilience-june-2020.pdf) [Accessed March 2026]

242 Institute of Environmental Management and Assessment (2020) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation. Available at: <https://www.iema.net/media/mabhqino/iema-eia-climate-change-resilience-june-2020.pdf> [Accessed March 2026]

243 UK Government (2025). National Planning Policy Guidance: Flood Risk and Coastal Change. (Online) Available at: <https://www.gov.uk/guidance/flood-risk-and-coastal-change#planning-and-flood-risk>. [Accessed March 2026].

244 ISEP (2022). Climate Change Adaptation Practitioner Guidance. (Online). Available at: <https://www.isepglobal.org/media/zavnckc2/climate-change-adaptation-practitioner-guidance.pdf>. [Accessed March 2025].

245 World Business Council for Sustainable Development and World Resources Institute (2020). The GHG Protocol: A Corporate Accounting and Reporting Standard Revised Edition. (Online). Available at: <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>. [Accessed March 2026].

246 UK Government (2019). Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance. (Online) Available at: <https://assets.publishing.service.gov.uk/media/67161e8696def6d27a4c9ab3/environmental-reporting-guidance-secr-march-2019.pdf>. [Accessed March 2026].

247 ISOQAR (n.d.) ISO 14064-1 Greenhouse Gas (GHG) Management and Reporting. (Online) Available at: [https://isoqar.com/iso-standards/iso-14064/?utm\\_term=iso%2014064&utm\\_campaign=ISOQAR+-+Grouped&utm\\_source=adwords&utm\\_medium=ppc&hsa\\_acc=9802679998&hsa\\_cam=23204960093&hsa\\_grp=191653455310&hsa\\_ad=781598460905&hsa\\_src=g&hsa\\_tgt=kwd-302453853295&hsa\\_kw=iso%2014064&hsa\\_mt=p&hsa\\_net=adwords&hsa\\_ver=3&gad\\_source=1&gad\\_campaignid=23204960093&gclid=EAIaIQobChMik57Sz7uKkQMvm5xQBh24JAsGEAAAYAAEgI6xPD\\_BwE](https://isoqar.com/iso-standards/iso-14064/?utm_term=iso%2014064&utm_campaign=ISOQAR+-+Grouped&utm_source=adwords&utm_medium=ppc&hsa_acc=9802679998&hsa_cam=23204960093&hsa_grp=191653455310&hsa_ad=781598460905&hsa_src=g&hsa_tgt=kwd-302453853295&hsa_kw=iso%2014064&hsa_mt=p&hsa_net=adwords&hsa_ver=3&gad_source=1&gad_campaignid=23204960093&gclid=EAIaIQobChMik57Sz7uKkQMvm5xQBh24JAsGEAAAYAAEgI6xPD_BwE). [Accessed March 2026].

248 Kendon et al. (2025) State of the UK Climate in 2024. International Journal of Climatology 45 (S1). [Online] Available at: <https://rmets.onlinelibrary.wiley.com/doi/10.1002/joc.70010> [Accessed March 2026]

referenced within this chapter are wind speed, temperature, and precipitation. Key findings for this assessment are therefore as follows:

- Observations show the UK's climate is continuing to change, with recent decades being warmer, wetter and sunnier than the 20<sup>th</sup> Century.
- 2025 was the warmest year in the UK series from 1884, with the last 4 years in the top five warmest. This is the sixth time this century this record has been set.
- The most recent decade (2016 – 2025) has been 0.51°C warmer than 1991 – 2020, and 1.33°C warmer than 1961 – 1990, with warming extending both northwards and to higher altitudes.
- The UK's climate has become steadily wetter from the 1980s, due to an increase in winter half-year rainfall.
- Total annual rainfall in the most recent decade 2016 - 2025 has seen no change compared to 1991 – 2020 but has increased by 8% compared to 1961 – 1990.
- Storm Éowyn was the UK's most powerful windstorm for over a decade, hitting the UK in late January 2025, with a gust of 100 mph recorded in Scotland.

### 14.1.3 Potential Impacts and Effects

The following effects have the potential to result from the Proposed Development and shall be considered in the undertaking of further assessment:

- Effects of the Proposed Development on climate change throughout all phases of the Proposed Development (GHG Assessment). These would result from the GHG emissions released during construction, operation, and decommissioning activities (such as through fuel use for plant, embodied emissions from materials and manufacture) which would contribute to climate change, and any GHG savings associated with replacing conventional electricity generation which would mitigate climate change.
- Effects of climate change on the Proposed Development throughout all phases of the Proposed Development (CCRA). These constitute potential impacts from climatic changes, such as increases in temperature, changes in precipitation, and increases in the frequency of extreme events, on the workforce, environment, and infrastructure; and
- Effects of climate change on assessments made in other topics of the Proposed Development's ES (ICCI Assessment). These constitute where future climate change (such as changes in temperature and precipitation) may impact the sensitivity of receptors or the magnitude of effects identified for other EIA topics, which may impact the significance of identified effects.

#### 14.1.4 Proposed Assessment Methodology

There are no recognised standards or legislative requirements for assessing climate change; therefore, a combination of professional judgement, established EIA good practice, and relevant legislation, policy and guidance will be used to form the approach to this assessment. Further details of the proposed methodologies for the GHG Assessment and CCRA can be found in the following sections:

- **Section 14.2:** GHG Assessment;
- **Section 14.3:** CCRA; and
- **Section 14.4:** ICCI Assessment

## 14.2 GHG Assessment

### 14.2.1 Baseline Conditions

The GHG emissions produced by the Proposed Development will be assessed against the carbon budgets implemented by the Climate Change Act (2008) and the current UK GHG emissions.

### 14.2.2 Assessment Methodology

#### 14.2.2.1 Project Basis for Scoping Assessment

The Proposed Development aims to achieve a transition to clean energy using renewable energy sources (in this case wind energy). The Proposed Development involves the construction, operation and decommissioning of wind turbines to generate renewable energy, through the repowering and extension of the current operational Lambrigg Wind Farm. The GHG assessment will identify and calculate the GHG emissions arising from the Proposed Development during construction, operation and maintenance, and decommissioning. It will consider the increase or decrease in GHG emissions that arise from the Proposed Development. There is no geographical limit to the GHG assessment as GHG emissions are a global effect.

The Proposed Development will support a transition to clean energy through the development of a wind farm in Westmorland and Furness, Cumbria, Northwest England. It will therefore provide a GHG emissions benefit assuming that it will reduce GHG emissions from fossil fuels and this potentially will avoid or displace GHG emissions which will be considered as part of the GHG assessment.

### 14.2.2.2 Proposed Assessment Methodology

Given that there is no available tool in England to determine the greenhouse gas emissions savings and losses for English wind farm developments, it is proposed to use the Scottish Government's carbon calculator for wind farm developments to determine the carbon losses and savings for the Proposed Development. Carbon or GHG losses would occur through turbine manufacture, forestry felling, and peatland disturbance, for example, while carbon or GHG savings would occur through the replacement of conventional energy generation with renewable generation as well as any proposed peatland restoration. The carbon calculator would also provide the 'payback period' for the Proposed Development, which is the length of time (in years) it would take the carbon savings to offset the carbon losses (and therefore for the Proposed Development to become carbon neutral and start having a beneficial impact on GHG emissions).

Should any additional infrastructure (for example battery storage) be proposed, the impact of this would be assessed through a high-level calculation and the results combined with those of the carbon calculator.

The high-level assessment would involve the collection of activity data such as the quantity of materials used. The activity data will then be multiplied by the most appropriate conversion factor.

The GHG Assessment will report the GHG emissions in tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e).

Any GHG emissions released to the atmosphere will be classified as an impact to climate change due to the importance of limiting GHG emissions as set out by the Paris Agreement and UK government policy. To understand the significance, the ISEP guidance will be used to evaluate the net GHG emissions impact of the Proposed Development (see Table 14.1).

**Table 14.1 Significance Criteria for the GHG Assessment**

| Significance      | Significance Criteria                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Major Adverse:    | The Proposed Development's Greenhouse Gas (GHG) impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero. |
| Moderate Adverse: | The Proposed Development's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals                                                                                                                                                                       |

| Significance   | Significance Criteria                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.                                                                                                                                                                                                                                                                              |
| Minor Adverse: | The Proposed Development's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.                                                                                                    |
| Negligible:    | The Proposed Development's GHG impacts would be reduced through measures that go well-beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions. |
| Beneficial:    | The Proposed Development's net GHG impacts are below zero, and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to a "without-project" baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.                                                                                                             |

### 14.2.2.3 Potential Impacts

The GHG assessment will identify and calculate the GHG emissions associated with the construction, operation and decommissioning of the Proposed Development. The potential sources of GHG emissions associated with the Proposed Development will involve:

- **Construction:** This includes the extraction, manufacture and transport of raw materials and equipment to the Proposed Development; as well as the emissions associated with the construction processes on site (including fuel consumption of construction and installation equipment and vehicles; electricity consumption used by equipment and plant used during construction; and construction waste management).
- **Operation:** The GHG emissions associated with the operation of the Proposed Development will involve fuel consumption related to the maintenance equipment and vehicles used; the electrical supply to plant and equipment used during operations as well as the vented hydrogen and fugitive emissions.
- **Decommissioning:** This will involve the GHG emissions associated with the fuel consumption of plant, machinery and vehicles and the transport and disposal of materials and equipment during the decommissioning phase.

## 14.3 Climate Change Risk Assessment

### 14.3.1 Baseline Conditions

The baseline and future climate conditions are summarised in **Table 14.2**. In summary, the existing baseline conditions for the northwest England region are characterised by mild temperatures year-round and consistently high rainfall, particularly in autumn and winter. Key features of the future baseline conditions include the continued gradual increase in temperature, higher rainfall, reductions in water availability, particularly during the summer, and an increase in flood risk.

**Table 14.2 Existing and Future Climate Change Baseline Conditions for Northwest England Region<sup>249</sup>**

|                                              | Baseline | 2030<br>(SSP5-8.5) | 2050<br>(SSP5-8.5) | 2080<br>(SSP5-8.5) |
|----------------------------------------------|----------|--------------------|--------------------|--------------------|
| Maximum daily temperature (°C)               | 28.68    | 30.28              | 31.80              | 32.37              |
| Number of days > 35 degrees                  | 0.00     | 0.00               | 0.11               | 1                  |
| Total rainfall (mm)                          | 63.61    | 65.17              | 66.20              | 68.22              |
| Max 1-day rainfall (mm)                      | 45.56    | 47.85              | 50.02              | 54.53              |
| Pluvial 1 in 100-year flooding               | 5.23     | 5.24               | 5.26               | 5.29               |
| World Resources Institute (WRI) Water Stress | 0.06     | 0.07               | 0.09               | 0.10               |
| Forest Fire Danger Index                     | 0        | 0                  | 0                  | 0                  |
| Consecutive dry days                         | 20.7     | 20.3               | 21.3               | 20.8               |

### 14.3.2 Assessment Methodology

#### 14.3.2.1 Project Basis for Scoping Assessment

Given the climate change trends for the UK, it is possible that future climate change could impact the Proposed Development over its operational period. The potential

<sup>249</sup> Data derived from ISIMIP CMIP6 Downscaled Global Climate Models used within ERM's internal Global Climate Database.

impacts of climate change include extreme weather events, changes in temperature and precipitation (including flooding), sea level rise, sea temperature rise, wildfires and wind.

The receptors considered vulnerable to climate change include: infrastructure, human health (i.e. workforce) and the environment at each phase of the Proposed Development.

The CCRA assessment will analyse climate data from the UK Met Office for the Northwest England area. The current baseline will be based on historic 10-year climate data averages for the Northwest England administrative area between 1970 and 2020 from the UK Met Office.

The future baseline will be based on the climate trends released by the Intergovernmental Panel on Climate Change (IPCC) in 2021 (Assessment Report 6) which define a series of climate projections known as Shared Socioeconomic Pathways (SSPs) and the UK Met Office 2018 (UKCP18) Representative Concentration Pathways (RCP) which provide projections up to 2100 for different emission scenarios<sup>250</sup>. These pathways reflect potential changes in net carbon dioxide (CO<sub>2</sub>) emissions by combining climate and socio-economic data to create a series of plausible scenarios to reduce the impacts of global GHG emissions. For this CCRA, IPCC SSPs 5-8.5 and UKCP18 RCP8.5 will be used to represent a variety of future climate scenarios. SSP1-2.6 represents a future with strong mitigation effects and a focus on sustainability, resulting in a low emissions scenario and low levels of global warming. SSP5-8.5 and UKCP18 RCP8.5 represent a very high-emissions scenario with continued reliance on fossil fuels, leading to significant warming<sup>251</sup>.

For the future baseline the climate data covers three-time horizons: 2030, 2050, and 2080 based on the climate projections by the IPCC and UK Met Office. These projections set out the general climate conditions that would be experienced during all phases of the Proposed Development.

The data sources will be accessed through ERM's Global Climate Database (GCD) and will involve:

- Inter-sectoral impact model intercomparison project phase 3b (ISMIP3b). This provides historic and future climate data to assess heatwaves, extreme cold, extreme rainfall and water stress and drought;

<sup>250</sup> UK Met Office Climate Projections for the UK in 2018 (CP18). Available at: UK Climate Projections (UKCP) - Met Office

<sup>251</sup> Zeke Hausfather, Carbon Brief (2021). Explainer: How Shared Socioeconomic Pathways Explore Future Climate Change. Available at: <https://www.carbonbrief.org/explainer-how-shared-socioeconomic-pathways-explore-future-climate-change/>. [Accessed March 2026].

- Forest fire danger index which provides baseline and future climate data specific to wildfires;
- Fathom 3.0 flood inundation depth. This provides baseline and future climate data to assess pluvial and fluvial flooding; and
- WRI water risk atlas to understand water stress levels at the Proposed Development.

#### 14.3.2.2 Proposed Assessment Methodology

The climate assessment will be undertaken in line with the Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation (2020) developed by IEMA<sup>252</sup> as well as using professional judgement.

The CCRA evaluates climate risks to the Proposed Development by identifying relevant hazards, assessing the vulnerability of the receptors to the hazard and the likelihood or exposure of the receptors to the hazard to determine both initial and residual risk levels. It uses future climate projections and proposes mitigation actions to enhance climate resilience.

The CCRA involves the following steps:

- Gather baseline and future climate data for the Proposed Development's location;
- Identify potential climate change risks to the Proposed Development by assessing:
  - The hazard (i.e., the climate event itself such as flooding, extreme heat, water stress or wildfires);
  - Vulnerability of the receptors (including environment, workforce and infrastructure) to that hazard (i.e., the consequence of the hazard); and
  - Exposure (i.e., the level or likelihood to which the Proposed Development is exposed to the hazard).
- The CCRA understands the initial inherent risk where no mitigation measures are in place and then assesses the risk-taking account of embedded mitigation measures; and
- The final step is to determine the likely significance of the risk to the Proposed Development.

**Table 14.3** and **Table 14.4** present the criteria to measure exposure (likelihood) and vulnerability (consequence) of the Proposed Development to the climate hazards.

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<sup>252</sup> IEMA (2020) Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation. Available at: <https://www.iema.net/media/mabhqino/iema-eia-climate-change-resilience-june-2020.pdf>. [Accessed March 2026]

Table 14.3: Measure of Exposure (likelihood)

| Likelihood of Impact | Description                                                                                                                                                |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Almost Certain       | The climate hazard is expected to exceed a critical threshold under both scenarios, and across all future time horizons.                                   |
| Likely               | The climate hazard is expected to exceed a critical threshold under both scenarios, but only under a specific time horizon.                                |
| Possible             | The climate hazard may exceed a critical threshold in future, but only under a specific climate scenario and time horizon.                                 |
| Unlikely             | The climate hazard may occur under current conditions but is not projected to exceed a critical threshold in future under all scenarios and time horizons. |
| Rare                 | The climate hazard is not currently observed and is not projected to exceed a critical threshold in future under all scenarios and time horizons.          |

Table 14.4: Vulnerability (Consequence) Criteria to Assess Impact of Sensitive Receptors

| Consequence of Impact | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Very Large            | <p>Infrastructure; Significant permanent damage and/or complete loss of the infrastructure and infrastructure services. Extreme delays to / cancellation of the construction.</p> <p>Human health; Event leading to 1 or more fatalities on site.</p> <p>Environmental; Devastating environmental implications and regulatory non-compliance due to protected species/habitat change.</p> <p>Financial; Extreme financial loss and operation is unviable.</p>                                                   |
| Large                 | <p>Infrastructure; Extensive infrastructure damage and/or major loss of the infrastructure and infrastructure services. Major delays to the construction.</p> <p>Human health; Event leading to long term health issues / disabilities (over 14 days lost work).</p> <p>Environmental; Severe environmental implications and potential new environmental compliance obligations.</p> <p>Financial; Major financial loss and additional operating costs.</p>                                                     |
| Moderate              | <p>Infrastructure; Limited infrastructure damage and loss of service, damage recoverable by early maintenance and minor repair. Substantial construction interruption (5 days or more).</p> <p>Human health; Event leading to short term stress, medical treatment required (under 14 days lost work).</p> <p>Environmental; Moderate environmental implications and potential for additional mitigation and/or maintenance needs.</p> <p>Financial; Moderate financial loss and additional operating cost.</p> |

| Consequence of Impact | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Minor                 | <p>Infrastructure; Localised infrastructure service disruptions, no permanent damage, some minor repair work required. Minor construction interruption (5 days or less).</p> <p>Human health; Event leading to minor discomfort and/or first aid treatment</p> <p>Environmental; Minor environmental implications on landscaping or buffer vegetation and no impacts on protected species/habitats.</p> <p>Financial; Slight financial loss and additional operating costs.</p> |
| Negligible            | <p>Infrastructure; No damage, construction delays or additional operational costs.</p> <p>Human health; No injuries or illness.</p> <p>Environmental; No disturbance or disturbance is already within degraded or non-sensitive area.</p> <p>Financial; No financial loss or costs.</p>                                                                                                                                                                                         |

The significance of climate risk is assessed by considering the vulnerability (consequence) and exposure (likelihood), as shown in **Table 14.5**. Where the climate risk is assessed to be 'medium', 'high', or 'very high' this would be considered as a significant effect and would require mitigation or adaptation measures to improve the resilience of the receptor where possible.

**Table 14.5: Significance Matrix**

| Consequence | Likelihood |          |          |           |                |
|-------------|------------|----------|----------|-----------|----------------|
|             | Rare       | Unlikely | Possible | Likely    | Almost Certain |
| Negligible  | Very Low   | Very Low | Low      | Medium    | Medium         |
| Minor       | Very Low   | Low      | Low      | Medium    | High           |
| Moderate    | Low        | Low      | Medium   | High      | High           |
| Large       | Medium     | Medium   | High     | High      | Very High      |
| Very Large  | Medium     | High     | High     | Very High | Very High      |

### 14.3.2.3 Potential Impacts

**Table 14.6** details the potential climate hazards and their impact on the Proposed Development and describes the climate hazards that have been scoped out based on the existing climate data and professional judgement.

**Table 14.6 Scope of Climate Change Risk Assessment**

| Climate Hazard                              | Scope      | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Extreme weather events                      | Scoped In  | The Proposed Development may be vulnerable to extreme weather events such as heatwaves and storms. As a result, the impact of extreme weather events on the Proposed Development is scoped into the CCRA.                                                                                                                                                                                                                                                                                                                                                                         |
| Precipitation change (including flood risk) | Scoped In  | <p>The Proposed Development may be vulnerable to changes in precipitation, for example, pressure on water supply during periods of reduced rainfall (water stress), and increased risks of pluvial flooding. Therefore, precipitation change has been scoped into the CCRA.</p> <p>A standalone Flood Risk Assessment has been scoped out of the ES due to the design of the Proposed Development ensuring infrastructure would be located outside of Flood Zones 2 and 3 (including a climate change allowance). Changes to flood risk are therefore scoped out of the CCRA.</p> |
| Temperature change                          | Scoped In  | Increased temperatures (i.e., heat stress, heat / cold waves and frost) may alter the efficiency and integrity of the Proposed Development. Therefore, temperature change has been scoped into the CCRA.                                                                                                                                                                                                                                                                                                                                                                          |
| Sea level rise                              | Scoped Out | The Proposed Development is not located in an area that is anticipated to be affected by sea level rise. Therefore, sea level rise has been scoped out of the CCRA.                                                                                                                                                                                                                                                                                                                                                                                                               |
| Sea temperature rise                        | Scoped Out | Marine infrastructure is not included within the scope of the Proposed Development and therefore it is not likely to be affected by the anticipated small increase in sea temperature during its operational life. Therefore, sea temperature rise has been scoped out of the CCRA.                                                                                                                                                                                                                                                                                               |
| Wind                                        | Scoped In  | High wind speeds and gusts may have an impact on the Proposed Development, through damaging the turbines or making them less efficient. Therefore, wind has been scoped into the CCRA.                                                                                                                                                                                                                                                                                                                                                                                            |
| Wildfires                                   | Scoped Out | Table 14.2 suggests that increased temperatures are unlikely to cause an increased risk of wildfires on the Site. Therefore, wildfires have been scoped out of the CCRA.                                                                                                                                                                                                                                                                                                                                                                                                          |

## 14.4 ICCI Assessment

The ICCI Assessment assesses how projected climate conditions may amplify environmental effects identified in other technical chapters. It evaluates the likelihood and consequence of climate impacts on receptors and recommends additional mitigation only where effects are deemed significant. The ICCI assessment will be based upon the likely significant effects identified in the technical chapters of the ES and will be covered within relevant technical chapters of the ES rather than within the Climate Change and GHG Emissions Chapter.

## 14.5 Mitigation

The Proposed Development will be inherently designed to reduce adverse climate change effects by offsetting CO<sub>2</sub> produced in conventional energy generation methods through the use of renewable sources. This is in line with global and national policies and targets which are striving to reduce greenhouse gas emissions.

Mitigation measures relating to GHG emissions and climate change will be outlined in the ES. The GHG Assessment and CCRA will take account of the embedded mitigation measures integrated into the design of the Proposed Development.

## 14.6 Consultation and Scoping Questions

Consultation will be conducted with the following consultees:

- The Environment Agency; and
- Westmoreland and Furness Council.

Questions for Consultees are as follows:

- Q14.1 – Are consultees content with the proposed scope for the climate change and GHG Emissions EIA for the Proposed Development, including the proposed scope of the CCRA and the GHG Assessment?
- Q14.2 – Do consultees agree with the proposed use of the Scottish Government Carbon Calculator as the primary tool for quantifying greenhouse gas emissions and carbon savings and emissions, supplemented by additional calculations where necessary?
- Q14.3 - Do consultees agree with the proposed approach to assessing climate resilience using a precautionary worst-case climate change scenario?
- Q14.4 - Do consultees agree that the effects of future climate change on other environmental topics should be considered within the relevant technical assessments, rather than through a standalone ICCI assessment?

- Q14.5 – Are there any additional climate datasets, greenhouse gas methodologies, adaptation guidance, policy documents or assessment considerations / expectations that consultees consider should be included within the assessment?

# 15. Other Issues

## 15.1 Telecommunications and Utilities

This section of the Scoping Report has been produced by Pager Power and focuses on the potential for interference of the Proposed Development with telecommunications links and infrastructure.

It is proposed that this topic be scoped into the EIA. A telecommunications impact assessment will be undertaken by Pager Power, and the report will be appended to the ES.

### 15.1.1 Assessment Criteria & Methodology

#### 15.1.1.1 Previous Assessment

No previous assessment related to telecommunications links and infrastructure has been undertaken.

#### 15.1.1.2 Legislative Context, Technical Guidance and Good Practice

There is no standardised process within national guidance for assessing the impact of wind turbines upon telecommunications infrastructure. Pager Power's Telecommunications White Paper<sup>253</sup> aims to guide the industry on this complex planning issue and demonstrates Pager Power's approach to managing this process. Pager Power considers the second Fresnel Zone when considering diffraction effects of a moving obstruction (such as a wind turbine) upon microwave links, and 60% of the First Fresnel zone when considering diffraction effects of a moving obstruction upon ultra-high frequency (UHF) links. A buffer zone may then be added to produce the exclusion zone. This is based on industry good practice<sup>254</sup>. Where the link is UHF, reflection considerations may be required.

#### 15.1.1.3 Baseline Data Collection

Pager Power has reviewed the OFCOM Spectrum Information Portal.

Pager Power will consult with the most prevalent telecommunications link operators (based on Pager Power's experience and contacts database) to obtain local link and infrastructure details relevant to the Proposed Development.

The combination of the above will be used to establish the baseline environment.

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<sup>253</sup> Pager Power Telecommunications White Paper, First Edition, September 2023.

<sup>254</sup> Operators may have their own fixed standoff distances.

#### 15.1.1.4 Wind Farm Interference Mechanisms

Wind farms have the potential to interfere with wireless telecommunications links and infrastructure passing above ground and near to wind turbine locations.

Microwave and UHF wireless communication links are used to transmit information between two antennae via radio waves within a particular frequency band. The following text presents an overview of the interference mechanisms.

##### Fresnel Zones

A Fresnel Zone takes the form of an ellipsoid surrounding a link path and represents the area in which obstructions should not be sited to avoid diffraction losses. The width of the zone at any point along the link path is determined by the Fresnel Zone number, the frequency of the link and the distance from each link end. The width of the zone is maximal at the midpoint of the link path.

##### Diffraction – Microwave and UHF Links

Obstructions such as wind turbines, which are sited in between two microwave link antennae, can partially block the radio signal passing between them, thereby reducing the functionality of the link. This can occur even if the obstruction is not directly between the antennae but close to the link boresight. This kind of blocking is called 'diffraction'.

There are various approaches to safeguarding wireless communications links against obstruction from wind turbines. The most common approaches are:

- Implementation of a fixed stand-off distance around the link boresight;
- Safeguarding the relevant Fresnel Zone (discussed below).

The first approach is used by many operators who request a set buffer distance. Set stand-offs are occasionally conservative and produce a large exclusion zone distance. The second approach is to assess an obstruction on a case-by-case basis to calculate the most accurate exclusion zone. Pager Power considers the Second Fresnel zone when assessing the effect of a wind turbine upon microwave links and the 60% of the first Fresnel zone when assessing UHF links.

##### Reflections – UHF Links

Obstructions can affect UHF links by reflecting the signal between transmitter and receiver. This is not a significant concern for microwave links because they are highly directional. Typically, diffraction effects are likely to be the most significant concern due to the greater abundance of microwave point-to-point links and because both microwave and UHF links are safeguarded against diffraction effects.

#### 15.1.1.5 Proposed Assessment Methodology

The assessment will follow Pager Power's typical assessment methodology. A summary of the process is provided below.

A desk-based assessment and consultation with the relevant stakeholders will identify the existing infrastructure and assess the potential impact. Consultation with relevant telecommunication providers is a routine part of wind farm development.

Telecommunication links and/or infrastructure identified within the vicinity of the Site will be taken forward for technical assessment in accordance with the recommended methodology from the Joint Radio Company (JRC) for UHF links, and in accordance with the recommended methodology from Ofcom for microwave links, to predict potential impacts and plot relevant exclusion zones.

This assessment will be used to inform future layout iterations where necessary.

#### Geographical Scope

The consultation with the link operators will be completed based on the proposed turbine locations and/or the red line boundary of the proposed development. The study area is normally defined by the telecommunications links and infrastructure identified through consultation, with link operators providing details of their relevant infrastructure in the vicinity of the Site.

#### Temporal Scope

Construction and Operation phases of the Proposed Development.

#### 15.1.1.6 Assumptions and Limitations

The assessment is limited by the information available from telecommunications link operators and identified through the OFCOM Spectrum Information Portal.

Pager Power takes a conservative approach where necessary, including the use of buffer zones when calculating an exclusion zone.

### 15.1.2 Baseline Environment

A review of the Ofcom Spectrum Information Portal has been undertaken in March 2026.

This suggests that there is one fixed telecommunications link crossing the red-line boundary of the Proposed Development.

No consultation with telecommunications link operators has been undertaken to date. This will be undertaken as part of the telecommunications impact assessment appended to the ES to accurately understand the baseline environment.

It will be assumed that any existing links currently operate without significant interference.

### 15.1.3 Potential Environmental Impacts & Effects

The EIA and accompanying telecommunications impact assessment will identify the potential impacts and effects relevant to the topic and identify those impacts which are considered likely to result in significant effects, if any.

The Proposed Development will be designed to avoid impacts on telecommunications links and infrastructure, where possible. Technical mitigation solutions are likely to be available if significant impacts cannot be avoided.

Any technical mitigation will be implemented prior to construction of the Proposed Development through ongoing consultation with the relevant stakeholders. A record of these consultations will be included in the project consultation log, and any design changes will be documented in the EIA design chapter. Any requirement for mitigation will be enforced via a planning condition.

It is proposed that the potential for impacts on telecommunications links and infrastructure during the construction, operation, and decommissioning phases be scoped into the EIA in the first instance due to the scale of the Proposed Development, the significance of any impact and the potential implications upon telecommunications links and infrastructure.

### 15.1.4 Scoping Summary

The proposed scope of the assessment to be reported in the ES is summarised in Table 15.1.

**Table 15.1 Telecommunications and Utilities assessment scope summary**

| Impact                                              | Scoped in or out | Justification                                                                                                                                                                         |
|-----------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Construction, Operation, and Decommissioning</b> |                  |                                                                                                                                                                                       |
| Construction, Operation, and Decommissioning        | Scoped in        | No detailed assessment has been undertaken to date. This is scoped into the ES in the first instance due to the scale of the Proposed Development, the significance of any impact and |

| Impact | Scoped in or out | Justification |
|--------|------------------|---------------|
|--------|------------------|---------------|

the potential implications upon telecommunications links and infrastructure.

### 15.1.5 Consultation and Scoping Questions

Consultation will be conducted with the following consultees:

- Vodafone;
- Atkins Realis;
- The Joint Radio Company (JRC);
- Arqiva;
- BT;
- Virgin O2;
- The Mobile Broadband Network (MBNL);
- MLL Telecom;
- Airwave (Motorola Solutions)

Questions for Consultees are as follows:

- Q15.1.1 – Are any consultees aware of any additional telecommunication links or utilities stakeholders that should be taken into account?
- Q15.1.2 – Are consultees content that effects upon television reception and utilities can be scoped out of the EIA based on the commitment that attributable impacts will be suitably mitigated?

## 15.2 Aviation

### 15.2.1 Introduction

This section of the Scoping Report has been produced by Pager Power and focuses on the potential for interference of the Proposed Development with aviation activity and infrastructure.

Wind developments have the potential to impact aviation and radar infrastructure in their vicinity. This is predominantly due to three main considerations, namely:

- Wind turbines as physical structures that present a collision risk;
- Wind turbines interacting with electromagnetic signals; and
- Electromagnetic emissions emitted by the wind farm itself.

The second category can be further subdivided into, in simple terms, weakening a radio signal in the shadow of the wind development or reflection of an electromagnetic signal in unwanted directions.

It is proposed that this topic be scoped into the EIA due to no prior assessment having been undertaken to date, and the potential for significant effects. An aviation impact assessment report will be undertaken by Pager Power, and this will form a technical appendix to the ES.

## 15.2.2 Assessment Criteria & Methodology

### 15.2.2.1 Previous Assessment

No previous assessment related to aviation activity and infrastructure has been undertaken.

### 15.2.2.2 Legislative Context, Technical Guidance and Good Practice

Guidance and policy in respect of Aviation are dictated primarily by the Civil Aviation Publications (CAP) which are produced by the Civil Aviation Authority (CAA). There is also policy provided by the Ministry of Defence (MOD) and NATS (formally National Air Traffic Services). Specific document guidance documents relevant to the Proposed Development include:

- CAA (2022), CAP 168: Licensing of Aerodromes – Edition 12;
- CAA (2019), CAP 670: Air Traffic Services Safety Requirements – Edition 3;
- CAA (2020), CAP 738: Safeguarding of Aerodromes – Edition 3;
- Civil Aviation Authority (2026), CAP 764: CAA Policy and Guidelines on Wind Turbines – Edition 7;
- CAA (2018) CAP 777: Air Traffic Control (ATC) Surveillance Minimum Altitude Charts in UK Airspace Policy and Design Criteria;
- International Civil Aviation Organization (ICAO) Procedures for Air Navigation Services, Aircraft Operations, Volume II Construction of Visual and Instrument Flight Procedures, Fifth Edition;
- NATS Aeronautical Information Publication (AIP) (digital resource, various publication dates); and
- Air Navigation Order, 2016 – government legislation.

### 15.2.2.3 Baseline Data Collection

Pager Power will use its database of aviation installations and infrastructure, published data such as flight charts, and resources available to pilots such as

SkyDemon, to identify potential aviation effects of the Proposed Development once design freeze is reached.

Any relevant aviation infrastructure that is identified through scoping responses will also be considered, as appropriate.

The combination of the above will be used to establish the baseline environment.

#### 15.2.2.4 Proposed Assessment Methodology

The assessment will follow Pager Power's typical assessment methodology. A summary of the process is provided below.

The assessment of the effects of the proposed turbines will be based upon the relevant guidance and good practice.

It is necessary to consider the aviation and air defence activities of the Ministry of Defence (MOD) as safeguarded by the Defence Infrastructure Organisation (DIO). The types of issues that will be addressed in the ES chapter include:

- Licensed and unlicensed aerodromes within the relevant safeguarding distances;
- MOD Airfields, both radar and non-radar equipped;
- MOD remote ATC radars;
- MOD air defence radars;
- UK Met Office meteorological radars; and,
- Military low-flying.

It is also necessary to consider the possible effects of turbines upon the NATS En Route Ltd (NERL) Communications, Navigation and Surveillance (CNS) equipment systems – a network of primary and secondary radars and navigation facilities around the country.

As well as examining the technical impact of turbines on Air Traffic Control (ATC) facilities, it is also necessary to consider the physical safeguarding of ATC operations using the criteria laid down in CAP 168 Licensing of Aerodromes<sup>255</sup> to determine whether the Proposed Development will breach obstacle clearance criteria.

Pager Power's aviation database and assessment software will be used to identify potential aviation effects of the Proposed Development as its design evolves. Any potential effects will be categorised based on previous project experience and professional judgement. The results will then be used as a basis for consultation and liaison with relevant aviation bodies, including the MOD DIO, and NATS.

<sup>255</sup> <https://www.caa.co.uk/our-work/publications/documents/content/cap-168/>

The methodology for Obstacle Limitation Surfaces assessment is presented within CAP 168 Licensing of Aerodromes.

This assessment will be used to inform future layout iterations where necessary.

### Geographical Scope

Consultation criteria for civil aviation stakeholders are defined in Chapter 4 of the CAP 764 document<sup>256</sup> and the recommended distances include:

- Airfield with a surveillance radar – 30 km;
- Non radar licensed aerodrome with a runway of more than 1,100 m – 17 km;
- Non radar licensed aerodrome with a runway of less than 1,100 m – 5 km;
- Licensed aerodromes where the turbines would lie within airspace coincidental with any published Instrument Flight Procedure (IFP);
- Unlicensed aerodromes with runways of more than 800 m – 4 km;
- Unlicensed aerodromes with runways of less than 800 m – 3 km;
- Gliding sites – 10 km; and
- Other aviation activity such as parachute sites and microlight sites within 3 km – in such instances developers are referred to appropriate organisations.

CAP 764 goes on to state that these distances are for guidance purposes only and do not represent ranges beyond which all wind turbine developments will be approved, or within which they will always be objected to. These ranges are intended as a prompt for further discussion between developers and aviation stakeholders.

Key stakeholders include:

- Licensed and unlicensed aerodrome within the associated safeguarding distances;
- NATS En Route Ltd (NERL) and their associated communications, navigation and surveillance systems – a network of primary and secondary radars and navigation facilities around the country;
- The Met Office regarding their weather radar; and
- The MOD as safeguarded by the DIO. The types of issues that will be addressed in the ES include:
  - MOD Airfields, both radar and non-radar equipped;
  - MOD Air Defence Radars; and
  - Military Low Flying.

<sup>256</sup> <https://www.caa.co.uk/our-work/publications/documents/content/cap-764/>

The relevant safeguarding distance varies depending on the type of infrastructure being considered. Long range radar used for en-route navigation purposes can reasonably be safeguarded against wind turbines at ranges of 100 km or more. Specific aerodromes are typically safeguarded against physical obstructions that present a collision risk within ranges of less than 20 km.

The consultation with the link operators will be completed based on the proposed turbine locations and/or the red line boundary of the Proposed Development.

The Study Area is normally defined by the telecommunications links and infrastructure identified through consultation, with link operators providing details of their relevant infrastructure in the vicinity of the Site.

### Temporal Scope

Construction, operation and decommissioning phases of the Proposed Development.

#### 15.2.2.5 Assumptions and Limitations

The assessment is limited by the information within Pager Power's database, and information publicly available about aviation infrastructure.

Pager Power takes a conservative approach where necessary. The EIA and accompanying aviation impact assessment will identify the assumptions and limitations in further detail.

### 15.2.3 Baseline Environment

No detailed assessment related to aviation activity and infrastructure has been undertaken to date.

The nearest licensed airport is located approximately 46 km south-west of the Proposed Development red-line boundary (Walney Aerodrome).

There are no unlicensed general aviation airfields within 10 km of the Proposed Development red-line boundary. The nearest is located approximately 24 km north of the Proposed Development red-line boundary (Bedlands Gate Airstrip).

An initial review of archived aviation safeguarding data suggests that The Proposed Development is contained within a MOD low-priority military low flying area, where concerns are less likely to be raised.

More recent information from the MOD advises that the daytime UK Low Flying System (UKLFS) is divided into 19 separate low flying areas (LFA), three Tactical Training Areas (TTA) and the Thames Valley Avoidance Area (TVAA). The Proposed Development is located within LFA 17.

During night-time hours, to ensure safe separation, a slightly different system is used. The Proposed Development is located within area 3BW.

It is likely that subject to the proposed wind turbines being appropriately lit, the MoD would not have any significant concerns over the proposed development's impact on daytime or night-time low flying.

Confirmation will be obtained through statutory consultation with the MOD undertaken during the planning process.

Further information on the current baseline environment related to aviation activity and infrastructure is unknown at this stage.

The EIA and accompanying aviation impact assessment report will identify the baseline environment in detail.

#### **15.2.4 Potential Environmental Impacts & Effects**

The development of wind turbines has the potential to cause a variety of adverse effects on aviation during turbine operation. These include (but are not limited to): physical obstructions, the generation of unwanted returns on Primary Surveillance Radar (PSR), and adverse effects on the overall performance of CNS equipment.

Where there is line of sight between turbines and air traffic control radars it is possible that the turbines may be detected by the radar, dependent on atmospheric conditions, and appear as clutter on the controllers' screens; such clutter can have a direct operational impact on air traffic control operations. Similarly, turbines when constructed can act as a physical obstruction either to aviation operations at aerodromes in the vicinity of the development or aircraft transiting the area.

The EIA and accompanying aviation impact assessment report will identify the potential impacts and effects relevant to the topic and identify those impacts which are considered likely to result in significant effects, if any.

The Proposed Development will be designed to avoid impacts on aviation activity and infrastructure, where possible. Technical mitigation solutions are likely to be available if significant effects cannot be avoided.

Any technical mitigation will be implemented prior to construction of the Proposed Development through consultation with the relevant stakeholders. A record of these consultations will be included in the project consultation log, and any design changes will be documented in the EIA design chapter. Any requirement for mitigation will be enforced via a planning condition.

### 15.2.5 Scoping Summary

The proposed scope of the assessment to be reported in the ES is summarised in Table 15.2.

Table 15.2 Aviation assessment scope summary

| Impact                                                        | Scoped in or out | Justification                                                                                                                                                                                                                           |
|---------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Construction, Operation, and Decommissioning                  |                  |                                                                                                                                                                                                                                         |
| Potential for impacts on aviation activity and infrastructure | Scoped in        | No detailed assessment has been undertaken to date. This is scoped into the EIA in the first instance due to the scale of the Proposed Development, the significance of any impact and the potential implications upon aviation safety. |

### 15.2.6 Consultation and Scoping Questions

Consultation will be conducted with the following consultees:

- Ministry of Defence;
- NATS; and,
- Licensed and Unlicensed Aerodromes where applicable.

Questions for Consultees are as follows:

- Q15.2.1 – Do consultees agree with the suggested approach regarding the proposed assessment of Aviation within the EIA Report;

## 15.3 Shadow Flicker

### 15.3.1 Introduction

This section sets out the potential impacts and effects associated with shadow flicker from the Proposed Development and the proposed methodology to assess these within the EIA.

Shadow flicker occurs when sunlight passes behind the rotating blades of a wind turbine, casting moving shadows over nearby properties. As the shadow of a blade crosses a small opening, such as a window, it can cause a momentary reduction in internal light levels, creating a flickering effect.

The likelihood and duration of shadow flicker depend on several factors, including the orientation, distance, and aspect of residential properties relative to the turbines;

turbine height and rotor diameter; the intervening topography; the time of year and time of day; and the prevailing weather conditions.

### 15.3.2 Baseline Conditions and Key Sensitivities

Shadow flicker receptors include residential properties, office buildings, and other structures where it can be reasonably demonstrated that people may spend sufficient time to experience shadow flicker effects.

Within the rural, upland landscape surrounding the Site, residential properties are typically dispersed, with more concentrated clusters associated with the nearby settlements of Kendal and Sedbergh.

A desk-based review using OS AddressBase data and aerial imagery will be undertaken to identify properties that are residential in nature and fall within the defined shadow flicker study area (see **Figure 15.1** and **Section 15.3.3**) for further assessment.

### 15.3.3 Proposed Assessment Methodology

The shadow flicker assessment will be undertaken with reference to the following policy and guidance:

- Update of UK Shadow Flicker Evidence Base<sup>257</sup>;
- Westmoreland and Furness Local Development Scheme (2025)<sup>258</sup>;
- South Lakeland District Council Local Development Framework Core Strategy (2010)<sup>259</sup>;
- Lake District National Park Local Plan (2021)<sup>260</sup>;
- Yorkshire Dales National Park Local Plan (2021)<sup>261</sup>;
- UK Government *Planning Practice Guidance for Renewable and Low Carbon Energy*<sup>262</sup>; and
- Northern Ireland Wind Energy Development Guidelines: *Best Practice Guidance to Planning Policy Statement 18—Renewable Energy*<sup>263</sup>.

257 Parsons Brinckerhoff. (2011). Update of UK shadow flicker evidence base. Department of Energy & Climate Change (DECC). Available at:

<https://assets.publishing.service.gov.uk/media/5a79770bed915d0422068aa3/1416-update-uk-shadow-flicker-evidence-base.pdf> [Accessed March 2026]

258 Westmoreland and Furness Local Development Scheme (2025) Available at: Westmorland and Furness LDS February 2025. [Accessed March 2026].

259 South Lakeland District Council Local Development Framework Core Strategy (2010) Available at: Core strategy October 2010. [Accessed March 2026]

260 Lake District National Park Local Plan (2021) Available at: Local Plan : Lake District National Park [Accessed March 2026]

261 Yorkshire Dales National Park Local Plan (2021) Available at: Local-Development-Scheme-Dec-21.pdf [Accessed March 2026]

262 Department for Communities and Local Government. (2013). Planning practice guidance for renewable and low carbon energy. Available at:

[https://data.parliament.uk/DepositedPapers/Files/DEP2013-1395/Planning\\_Practice\\_Guidance\\_for\\_Renewable\\_and\\_Low\\_Carbon\\_Energy.pdf](https://data.parliament.uk/DepositedPapers/Files/DEP2013-1395/Planning_Practice_Guidance_for_Renewable_and_Low_Carbon_Energy.pdf) [Accessed March 2026]

263 Department of the Environment for Northern Ireland. (2009). Best practice guidance to Planning Policy Statement 18: Renewable energy. Available at:

<https://library2.nics.gov.uk/pdf/drd/2009/0020.pdf> [Accessed March 2026]

There is no statutory UK or English legislation that directly regulates the assessment or control of shadow flicker. Accordingly, non-statutory UK guidance, including Scottish and Northern Irish sources, is considered material to the assessment in the absence of England-specific standards.

The assessment methodology will be developed in line with the relevant guidance listed above. The UK Government's *Planning Practice Guidance for Renewable and Low Carbon Energy* notes that shadow flicker in the UK can only affect properties located within 130 degrees on either side of north relative to the turbine position, as turbines do not cast long shadows to the south. The guidance also advises that wind turbines should be located at least ten times the blade (rotor) diameter from any regularly occupied building unrelated to the development. Where this separation is not achieved, a shadow flicker assessment is required. This distance (ten times the rotor diameter) will therefore define the shadow flicker Study Area for this assessment.

Preliminary baseline analysis has confirmed that some properties fall within this Study Area based on the Scoping layout. A shadow flicker assessment will therefore be undertaken as part of the EIA, with results presented in the ES. All properties located within a distance equal to ten times the rotor diameter of each turbine will be assessed. Although receptors located to the south of the turbines (outside 130 degrees either side of north) are unlikely to experience shadow flicker, they will be included in the assessment for completeness. Where relevant receptors are identified within the Shadow Flicker Study Area, the modelling software Resoft Windfarm Release 5 will be used to quantify potential shadow flicker effects.

There are no statutory significance criteria relating to the duration or frequency of shadow flicker. Industry-recognised thresholds will therefore be applied to determine significance for this assessment. Significant impacts are defined as those exceeding:

- Worst-case scenario: 30 hours per year or 30 minutes per day; and
- Realistic scenario: 8 hours per year, derived by adjusting the worst-case results to reflect likely sunshine hours and realistic conditions at the Site.

### 15.3.4 Potential Impacts and Effects

Shadow flicker may occur under certain combinations of geographical position, turbine operation, and time of day, when sunlight passes behind the rotating blades of a turbine and casts moving shadows over nearby properties. The effect arises when the shadow of a blade passes across a window or similar opening, briefly reducing internal light levels and creating a perceptible flicker. Shadow flicker can only occur inside buildings when the full window opening is affected and can, in some circumstances, lead to disturbance or nuisance for occupants.

Shadow flicker effects would not arise during construction or decommissioning, as turbines must be operational for such effects to occur. Potential impacts are therefore limited to the operational phase of the Proposed Development.

### 15.3.5 Mitigation

Mitigation measures for shadow flicker can be applied at various points, including:

- At the receptor, such as installing blinds or other internal shading;
- Along the pathway, for example through planting or other screening measures; and
- At the source, typically through programmed turbine shutdown during periods when shadow flicker is predicted to occur.

Appropriate mitigation will be considered once potential effects have been identified through the EIA process.

### 15.3.6 Proposed Scope of the ES Chapter

Properties located beyond the distance equal to ten times the rotor diameter will be scoped out of the shadow flicker assessment. Any receptors located within the Shadow Flicker Study Area will be scoped into the EIA for further consideration.

If subsequent design evolution results in no receptors falling within the Shadow Flicker Study Area, a shadow flicker assessment would be wholly scoped out of the EIA.

**Table 15.3 Shadow Flicker assessment scope summary**

| Environmental Receptor, Assessment or Effect                                       | Scoped In / Out | Rationale                                                                                                                                         |
|------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Shadow Flicker Effects for receptors within the Shadow Flicker Study Area          | Scoped in       | Shadow flicker effects have the potential to occur for receptors located within a distance equal to ten times the rotor diameter of the turbines. |
| Shadow Flicker Effects for receptors located outside the Shadow Flicker Study Area | Scoped Out      | Shadow flicker effects are unlikely to occur for receptors beyond the Shadow Flicker Study Area and this reflects current guidance.               |

### 15.3.7 Consultation and Scoping Questions

No specific consultation is proposed with respect to Shadow Flicker.

Questions for all consultees are as follows:

- Q15.3.1 – Do consultees agree with the suggested approach regarding the proposed assessment of shadow flicker within the EIA Report?

## 15.4 Human Health

### 15.4.1 Baseline Conditions and Key Sensitivities

Please refer to **Section 2** of this Scoping Report for details on the general Site context.

### 15.4.2 Proposed Assessment Methodology

Aspects which have the potential to affect human health during the construction and operation include land contamination, pollution of water supplies, noise and vibration, air quality, traffic, and socio-economics. All of these aspects are covered by other chapters including:

- **Chapter 8:** Hydrology;
- **Chapter 9:** Geology and Peat;
- **Chapter 10:** Traffic and Transport;
- **Chapter 12:** Noise and Vibration;
- **Chapter 13:** Socio-economics and Tourism; and
- **Chapter 14:** Climate Change and Greenhouse Gas Emissions.

### 15.4.3 Potential Impacts and Effects

The methodologies proposed to assess potential impacts and effects on human health are included in the Chapters noted in **Section 15.4.2**

### 15.4.4 Mitigation

Mitigation proposed to address any likely significant adverse effects on human health are included in the chapters noted in **Section 15.4.2**.

## 15.4.5 Proposed Scope of the EIA Chapter

Table 15.4 Human Health assessment scope summary

| Environmental Receptor, Assessment or Effect                    | Scoped In / Out | Rationale                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on Human Health resulting from the Proposed Development | Scoped Out      | There are unlikely to be potentially significant effects to human health because of the Proposed Development that are not adequately covered by other chapters, as noted in Section 15.4.2. It is therefore proposed that Human Health as a topic in its own right is scoped out of the EIA. |

## 15.4.6 Consultation and Questions for Consultees

No direct consultation on Shadow Flicker is proposed, however should consultees have specific queries regarding this subject, they will be addressed in the ES.

Questions for all consultees are as follows:

- Q15.4.1 – Are consultees content that effects upon Human Health can be scoped out of the EIA based key potential health impacts being assessed in other chapters of the ES?

## 15.5 Major Accidents and Disasters

The EIA Regulations state that an EIA must identify, describe, and assess in an appropriate manner, the expected effects deriving from the vulnerability of the Proposed Development to risks presented by unplanned events, such as major accidents and natural disasters.

### 15.5.1 Baseline conditions and Key Sensitivities

Please refer to **Section 2** of this Scoping Report for details on the general Site context.

The Proposed Development is not located within an area known for natural disasters such as wildfires, floods, hurricanes, tornadoes, volcanic eruptions, earthquakes, or tsunamis. As climate change progresses, however, weather events are becoming more extreme and it is possible that the north of England will see an increase in summer temperatures, and/or large storms with high rainfall events and flooding at any time of the year.

As the most probable of natural disasters to affect the Proposed Development, flood risk will be assessed in **Chapter 8: Hydrology** of the ES.

There are areas of peatland habitat within the Site. As such, there is an increasing risk of wildfires due to climate change, especially as summers become hotter and drier.

### 15.5.2 Proposed Assessment Methodology

Relevant information pertaining to the definition and management of major accidents, which may include chemical spills and infrastructure failure which results in serious bodily harm, will be obtained pursuant to the legislation of the European Union, such as Directive 2012/18/EU of the European Parliament on the control of major-accident hazards involving dangerous substances<sup>264,265</sup>.

### 15.5.3 Potential Impacts and Effects

During all phases of the Proposed Development there is a risk of environmental incidents such as accidental leaks/spills of oil, fuel chemicals or waste material, and of major accidents resulting from infrastructure failure.

There is a risk of a major accident and/or infrastructure failure caused by natural disasters which may increase because of climate change. This should be considered during the preparation of major accident scenarios. However, as stated in **Section 15.5.1**, natural disasters are unlikely at this Site and are therefore unlikely to have a bearing on the risk of major accidents and disasters.

Flooding is not expected to pose a significant risk to the operation of the wind farm, and the construction of a wind farm at this location is unlikely to contribute to flooding elsewhere. For further details of flooding impacts associated with the Proposed Development, see **Chapter 8: Hydrology**.

<sup>264</sup> European Union (2012) Directive 2012/18/EU [Online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012L0018> (Accessed 13/02/2026)

<sup>265</sup> UK Government and Health and Safety Executive (2015) The Construction (Design and Management) Regulations 2015. [Online] Available at: <https://www.hse.gov.uk/construction/cdm/2015/index.htm> (Accessed 13/02/2026)

### 15.5.4 Mitigation

Incidents during the construction phases will be managed by the Principal Contractor via a Pollution Prevention Plan (PPP) and CEMP, which is usually provided to consultees prior to commencement of construction under condition as part of any consent. During the operational phase, an inspection and maintenance regime shall be implemented which would identify potential equipment failures to prevent leaks occurring. The storage and handling of oils, fuels and waste shall be controlled by standard operational procedures, as well as ongoing audits and inspections.

Brake mechanisms installed on turbines allow them to be operated only under specific wind speeds and, should severe windstorms be experienced, then the turbines would be shut down to prevent any infrastructure failure or collapse. The Proposed Development is not located within an area prone to such disasters and the likelihood of such an event is extremely rare. Safety regulations and measures will be in place throughout the lifetime of the Proposed Development so it is very unlikely that structural failure will impact upon human health.

Health and safety during the construction and operation phases of the Proposed Development is of utmost importance to the Developer and is subject to relevant legislation including, but not limited to, The Construction (Design and Management) Regulations 2015<sup>266</sup>, and good practice.

### 15.5.5 Proposed Scope of EIA Chapter

Table 15.5 Major Accidents and Disasters assessment scope summary

| Environmental Receptor, Assessment or Effect | Scoped In / Out | Rationale                                                                                                                        |
|----------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------|
| Natural Disasters                            | Scoped Out      | The area is not known for hurricanes, tornadoes, or volcanoes, and thus these natural disasters can be scoped out of assessment. |

<sup>266</sup> UK Government and Health and Safety Executive (2015) The Construction (Design and Management) Regulations 2015. [Online] Available at: <https://www.hse.gov.uk/construction/cdm/2015/index.htm> (Accessed 13/02/2026)

| Environmental Receptor, Assessment or Effect                | Scoped In / Out | Rationale                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Natural Disasters Related to Climate Change                 | Scoped Out      | Natural disasters related to climate change can be scoped out of the EIA, as none of the identified climate change trends are likely to significantly affect the Proposed Development, with the exception of increased windstorms and potential wildfires caused by infrastructure failure. The potential for these latter natural disasters will be sufficiently mitigated that the likelihood of them occurring is minimal to negligible. |
| Accidental leaks/spills of oil, fuel, chemicals, and wastes | Scoped Out      | Potential effects resulting from accidental leaks/spills of oil, fuel, chemicals, and wastes will be scoped out of any further assessment of Major Accidents and Disasters, as this will be covered in the Hydrology and Hydrogeology assessment, and suitable mitigation will be provided prior to construction, as per standard construction mitigation practice, within the PPP and CEMP.                                                |
| Health and Safety Matters                                   | Scoped Out      | Health and safety matters will be covered by Health and Safety legislation and therefore there is no further requirement for health and safety to be assessed within the EIA and it is scoped out of further assessment.                                                                                                                                                                                                                    |

### 15.5.6 Consultation and Questions for Consultees

No direct consultation on Major Accidents and Disasters is proposed, however should consultees have specific queries regarding this subject, they will be addressed in the ES.

Questions for all consultees are as follows:

- Q15.5.1 – Are consultees content that effects upon Major Accidents and Disasters can be scoped out of the EIA based on the commitment that attributable impacts will be suitably mitigated?

## 15.6 Cumulative Effects Assessment

In accordance with the EIA Regulations, the EIA will consider cumulative effects.

### 15.6.1 Baseline Conditions and Key Sensitivities

Please refer to **Section 2** of the Report for details on general Site Context.

### 15.6.2 Proposed Assessment Methodology

There is currently no standard EIA methodology for assessing cumulative effects, however ISEP recognises two types of cumulative assessment in their guidance, which are:

- Intra-cumulative effects – These effects occur where a single receptor is affected by more than one source of effect arising from different aspects of the project. An example of an intra-project effect would be where a local resident is affected by dust, noise, and traffic disruption during the construction of a scheme, with the combined result being the potential for a greater impact than each individual effect alone; and,
- Inter-cumulative effects – These effects occur as a result of a number of developments, which individually might not be significant, but when considered together could create a significant cumulative effect on a shared receptor and will include developments separate from and related to the project.

### 15.6.3 Potential Impacts and Effects

Detailed consideration of inter-project effects will be undertaken for all relevant technical assessments and will be included in the relevant ES chapters.

The methodology for assessing intra-project effects involves the identification of impact interactions associated with the construction and operation phases of the

Proposed Development upon one or more receptors. This is undertaken using a qualitative appraisal process.

A receptor with multiple effects which have been individually assessed as being above the level of perceptibility (i.e., minor or above), could still be affected significantly due to the combination of one or more other perceptible effects. The intra-project assessment considers all effects (adverse and beneficial) which have been assessed as minor (which, taken individually, is not significant in the context of the EIA Regulations), moderate, or major.

The approach to be adopted for the intra-project assessment will be to examine in turn each residual effect for each individual receptor. These are presented as the Stage 1 assessment. It is then identified if multiple effects are experienced at an individual receptor and if so, using professional judgement, whether this could give rise to a significant intra-project effect to that receptor. This is presented as the Stage 2 assessment.

#### 15.6.4 Proposed Scope of the EIA Chapter

Table 15.6 Cumulative Effects assessment scope summary

| Environmental Receptor, Assessment or Effect | Scoped In / Out | Rationale                                                                                                                                                                   |
|----------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intra-Cumulative Effects                     | Scoped in       | The potential for intra-cumulative effects cannot be ruled out based on the information currently available. As such, intra-cumulative effects will be scoped into the EIA. |
| Inter-Cumulative Effects                     | Scoped In       | Detailed consideration of inter-project effects will be undertaken for all relevant technical assessments and will be included in the relevant ES chapters.                 |

#### 15.6.5 Questions for Consultees

- Q15.6.1 – Do consultees agree with the proposed approach for cumulative effects assessment?

# Appendix A: Figures

# Appendix B: Cultural Heritage and Archaeology Baseline

# Executive Summary

This Cultural Heritage Historic and Archaeological Baseline supports the Lambrigg Park Repowering project and provides an overview of known heritage assets within a 1 km Study Area, along with an assessment of archaeological potential within the Site. No designated assets lie within 1 km, but 35 non-designated assets have been identified, representing activity from the prehistoric, Romano-British, medieval, post-medieval, and modern periods. These include prehistoric settlement traces, a Romano-British enclosure, medieval parks and markers, and a dense concentration of post-medieval and modern quarries and extractive features.

Historic mapping shows that the Site and surrounding landscape have remained largely unchanged since the late 19th century. Archaeological potential varies by period, with low potential for prehistoric remains, moderate potential for Romano-British and medieval activity, and high potential for post-medieval and modern industrial features. There remains a realistic possibility that further unrecorded buried remains survive, particularly where later land use may have obscured earlier deposits. This baseline will inform the Cultural Heritage Chapter of the Scoping Report and forthcoming ES.

## 1.1 Outline

This heritage and archaeological baseline has been prepared by Environmental Resources Management (ERM) on behalf of the Applicant for the Lambrigg Repowering and Extension project (hereafter referred to as the Proposed Development or the Site).

The purpose of this document is to set out the existing heritage baseline within a 1 km Study Area, encompassing the Site boundary and surrounding land. It provides an overview of known heritage assets and considers the potential for previously unrecorded (typically below ground) archaeological remains within the Site. The baseline also identifies the location of known assets in relation to key elements of the Proposed Development.

The baseline presented here will inform the Environmental Statement (ES)/Environmental Impact Assessment (EIA), where potential direct and indirect (physical) impacts on known or potential heritage assets arising from the Proposed Development will be fully assessed.

## 1.2 The Development

The Site is located on the eastern face of Lambrigg Fell and comprises the existing Lambrigg Wind Farm, which the Proposed Development seeks to repower. It lies within Lambrigg Civil Parish (CP), which is bounded by Docker CP to the west, Grayrigg CP to the north, Firbank CP to the east, and New Hutton CP to the south.

The M6 motorway runs north-south along the eastern side of the Proposed Development, centered approximately on NGR 592940. The A684 is located to the south of the Site. The surrounding landscape consists predominantly of upland pasture interspersed with small areas of plantation forestry.

Settlement within the wider area is characterised by dispersed farmsteads, with the larger towns of Sedbergh to the east and Kendal to the west. The English Lake District lies further to the west.

According to the British Geological Survey (BGS)<sup>1</sup>, the bedrock geology of the area forms part of the Kirkby Moor Formation Sandstone, overlain in places by superficial deposits of Devensian Till (diamicton).

## 1.3 Development Description

The Proposed Development comprises the construction of an onshore wind farm of approximately seven turbines with a 200 m tip height.

### 1.3.1 Methodology and Aims

#### 1.3.1.1 Methodology

The archaeological and historical baseline provides a written description of the known heritage resource within a 1 km Study Area, outlines the historic character of the surrounding landscape, and identifies the archaeological potential of the Proposed Development. This information is used to determine the proximity of known assets to key project infrastructure and to assess the potential for additional, currently unrecorded, heritage assets within the Site boundary.

This document is supported by the following figures and annexes within the main text:

- **Figure 11.1** Site Layout and Cultural Heritage Study Areas;
- **Figure 11.2** Designated and Non-Designated Assets within 1 km;
- **Figure 11.3** Designated Assets within 15 km; and

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<sup>1</sup> British Geological Survey GeoIndex Onshore Viewer. Available at GeoIndex - British Geological Survey ([bgs.ac.uk](https://bgs.ac.uk)).[Accessed on 27/03/2026].

- **Appendix C** Preliminary Selection of Assets Anticipated to be at Risk of Settings Impact.

The baseline, read alongside **Chapter 11** of the Scoping Report, has been prepared in accordance with the Chartered Institute for Archaeologists' (CIfA) Standard and Guidance for Historic Environment Desk-Based Assessment<sup>2</sup>.

## Study Areas

The historic and archaeological baseline comprises a written description of the known heritage resource, within a 1 km Study Area (**Figure 11.2**). Consideration of the wider historic environment in relation to setting is not included within this appendix, as setting effects are addressed separately within **Chapter 11** of the Scoping Report. The wider historic environment is referenced here only where necessary to provide contextual understanding for known and potential archaeological remains within the 1 km Study Area.

## Baseline Data Collation

To establish the historic environment baseline and aid in the assessment of the physical and ground-based archaeological potential of the Proposed Development area, a comprehensive review of data was collated from the following sources:

- Historic England Datasets<sup>3</sup> including:
  - Database of World Heritage Sites;
  - Database of Scheduled Monuments;
  - Database of Listed Buildings;
  - Database of Registered Parks and Gardens; and
  - Database of Inventoried Battlefields.
- Westmorland and Furness Council Historic Environment Record (HER)<sup>4</sup> (consulted March 2026);
- British Geological Survey BGS Index<sup>5</sup>;
- National Library of Scotland Maps<sup>6</sup>;
- Readily accessible published sources and grey literature (e.g. results from previous studies);

<sup>2</sup> Chartered Institute for Archaeologists' (CIfA) Standard and Guidance for Historic Environment Desk-Based Assessment

<sup>3</sup> Historic England (2026) Search the List [Online] Available at: <https://historicengland.org.uk/listing/the-list/> [Accessed March 2026]

<sup>4</sup> Westmorland and Furness Council Historic Environment Record, available at:

<https://maps.cumbria.gov.uk/eggp/eggp.aspx?dept=Environment&scriptname=Historic%20Environment&scale=600000> [Accessed March 2026]

<sup>5</sup> British Geological Survey (2026) Geoindex [Online] Available at: <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/> [Accessed March 2026]

<sup>6</sup> National Library of Scotland (2026) Map Images [Online] Available at: <https://maps.nls.uk/> [Accessed March 2026]

- Relevant academic papers and thesis;
- Regional historic environment research frameworks;
- Unpublished site reports and survey results held by local heritage groups;
- the Environment Agency's library of open access LiDAR data (DTM and DSM);
- Conservation Area Appraisals and maps as held by the local planning authority;
- Regional and national research framework assessments and strategies; and
- Published and grey literature archaeological journals and monographs.

### **Assessment of Cultural Significance / Heritage Value and Potential**

The framework for assigning value to a heritage asset and the methodology for determining the potential for further unknown heritage assets to be present within the site boundary is provided within **Chapter 11** of the Scoping Report.

### **Aims**

The aims of this document are as follows:

- Establish a baseline for the historic environment within the 1 km Study Area, alongside a summary of the wider historic landscape to provide context for the 1 km Study Area.;
- Establish the archaeological potential for unknown buried archaeology to survive within the site boundary;
- To assign a cultural significance / value to known heritage assets within the 1 km Study Area; and
- To identify known heritage assets that may be impacted by key infrastructure and for which further design consideration and assessment may be required.

### **Objectives**

The objectives of this assessment are:

- To set out the statutory, planning and policy context relating to the historic environment;
- To provide an overview of the heritage resources within the Proposed Development and surrounding historic landscape, based on existing archaeological records and secondary sources; and
- To provide sufficient information on the baseline heritage resource to allow for informed decisions to be made in relation to direct/indirect (physical)

impacts. Setting effects have been scoped out for non-designated assets; therefore, this assessment does not address setting impacts.

## 1.4 Archaeological and Historical Baseline

### 1.4.1 Overview

The following section presents a summary of the known historical and archaeological baseline, with designated and non-designated assets identified. A summary of these assets, and associated ID, coordinates and period are presented in **Table 3**.

Where possible, assets have been assigned to time periods as defined by Historic England (see **Table 1** Period Definitions). Baseline assets are illustrated in **Figures 11.2 – 11.3** of **Chapter 11**.

**Table 1** Period Definitions

| Period Name      |                | Date Range              |
|------------------|----------------|-------------------------|
| Early Prehistory | Paleolithic    | 900,000 BC to 10,000 BC |
|                  | Mesolithic     | 10,000 BC to 4000 BC    |
|                  | Neolithic      | 4,000 BC to 2,000 BC    |
| Later Prehistory | Bronze Age     | 2000 BC to 900          |
|                  | Iron Age       | 900 BC to AD 43         |
| Roman            |                | AD 43 to AD 410         |
| Medieval         | Early Medieval | AD 410 to AD 1066       |
|                  | Later Medieval | AD 1066 to AD 1540      |
| Post -Medieval   |                | AD 1540 to AD 1901      |
| Modern           |                | AD 1901 to AD 2000      |

### 1.4.2 Designated Assets

There are no designated assets within the Site, or within 1 km of the Site.

### 1.4.3 Non-Designated Assets

Four non-designated heritage assets are located within the Site boundary. These comprise remnants of former land-use patterns and small-scale extractive or agricultural activity associated with the historic Lambrigg landscape. Lambrigg Park Deer Park (SMR6808) is a probable medieval enclosed landscape traditionally linked to managed deer husbandry within the wider Lambrigg monastic estate. Although no built features survive, the historic enclosure form and its relationship to local topography indicate its use as part of a medieval hunting or grazing landscape.

Hutton Park, New Hutton (SMR6813) refers to a medieval deer park, belonging to Joan de Coupland in records dating to 1375 AD. While the exact bounds of this deer park are unknown, the general area is still referred to as 'Hutton Park' on modern OS maps. Therefore, the possible bounds of the medieval deer park are located both within the Site as well as within the 1 km Study Area.

Lambrigg Park Farm and Quarry (SMR17507) represents a post-medieval agricultural and extractive site that formerly included farmstead land and small-scale quarrying. No above-ground features remain, but the area retains potential for buried archaeological deposits relating to past farming activity, quarry pits, or ancillary structures.

Powson Bridge Quarries (SMR17548) comprises further areas of post-medieval small-scale stone extraction within the Lambrigg landscape. While lacking extant structural remains, the site may contain below-ground archaeological evidence associated with former quarrying and land-use activity.

All four assets lie within the Proposed Development and therefore have the potential to be directly affected by ground-disturbing works.

#### 1.4.3.1 Previous Archaeological Investigations

At this stage, only high-level information on previous archaeological investigations within and around the Site is available. A full review of historic environment (event) records (HERs) has not yet been undertaken. The detailed HER dataset for the Lambrigg area will be requested from the relevant Local Planning Authority (LPA) to support the ES.

The ES will draw on the HER to provide a comprehensive account of past archaeological work, including any previous surveys, evaluations, or recorded investigations that may inform the archaeological potential of the Site. This information will be integrated into the final baseline, ensuring that the assessment reflects all known heritage evidence and aligns with industry good practice.

### 1.4.4 LiDAR

An initial review of the 50cm – 1m LiDAR DTM, as available for England has not identified any additional assets.

### 1.4.5 National Records of Scotland

A review of historic mapping available through the National Library of Scotland indicates that the Site and its surrounding landscape have remained effectively unchanged since at least the 1880s. The earliest available Ordnance Survey (OS) map editions depict a consistent pattern of land-use, field boundaries, and access routes that correspond closely with those visible today. No substantial development, reorganization of land parcels, or introduction of new structures is recorded on subsequent map editions, suggesting long-term continuity in the character and layout of the Site.

## 1.5 Baseline Discussion by Period

### 1.5.1 Prehistoric

The Cumbrian region is well known for polished Prehistoric stone axes, made in the Central Lake District fells, which have been found across Britain and Ireland, as well as for its many stone circles. Evidence for everyday domestic life from this period is limited, and how early farming developed in the region is not yet well understood. The Neolithic site uncovered at Ehenside Tarn in 1869 AD remains unusual for the quality of its preservation and the insight it provides into daily activities. More recent work along the Carlisle Northern Development Route and in the Eden Valley has shown that the area has strong potential to shed further light on how communities shifted from a Mesolithic to Neolithic lifestyle<sup>7</sup>.

Although a few sites and finds can be confidently dated to the later Bronze Age, identifying Iron Age activity in the Cumbrian region is challenging because there are no well-defined pottery traditions to help distinguish the period. Occasional high-status chance finds show that communities were present, but some evidence of woodland regeneration may point to a lower population at times. However, there are signs of increased land clearance and farming prior to the arrival of the Romans. Features such as field systems, cairn fields, and small scattered burial monuments may indicate wider social changes, as markers of land ownership and local identity became more common. Burial practices remain poorly understood in the area,

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<sup>7</sup> Cumberland and Westmorland Antiquarian and Archaeological Society, Lake District National Park Authority, & Cumberland and Westmorland & Furness Unitary Authorities. (2026). Section B: Prehistory—Neolithic and early Bronze Age. In *Cumbria and Lake District Research Framework for the Historic Environment*.

although continued use or reuse of earlier funerary sites, such as those at Hardendale Nab and Sizergh Fell, can be seen<sup>8</sup>.

Four prehistoric sites are recorded in the 1 km Study Area, comprising a Bronze Age cord-rig cultivation system (SMR44463), a hut platform associated with later triangulation activity (SMR44464), a possible hut circle with an adjacent stack stand (SMR44465), and a curvilinear enclosure (SMR44466). Together, these assets indicate low-intensity agricultural use and small-scale settlement or occupation across the area from the Bronze Age onwards, with some later reuse of higher ground for modern surveying. Collectively, they reflect a dispersed pattern of prehistoric land use and settlement activity within the local upland landscape.

### 1.5.2 Romano-British

Evidence from the Romano-British period is relatively well-represented in the Cumbrian region, although most of it relates to the network of military sites that formed part of the Roman empire's frontier from the late 1st century onwards. Carlisle began as a Roman settlement and had developed into an urban centre by the early 3rd century. Many years of research into Hadrian's Wall and the coastal defence system has added to the current understanding of this period in the region. Contrastingly, rural areas remain less well understood, and the connection between rural communities and nearby forts or early settlement clusters (such as vicus areas) is still unclear. The few rural sites that have been investigated contain little recognizably Roman material, making them hard to distinguish from late prehistoric settlements, and show limited engagement with the Romano-British economy. However, coin finds along the Furness coast point to some level of interaction with the military<sup>9</sup>.

One Romano-British site is recorded in the 1 km Study Area, comprising the Lakethwaite Enclosures in Firbank (SMR18592). However, the greater vicinity of the Site (15 km) includes 10 further designated assets dating to the Roman period, illustrating the immediate vicinity of the Site as a well-established Romano-British frontier landscape.

### 1.5.3 Medieval

Assets and/or remains dating to the earliest medieval periods are harder to recognise archaeologically in the Cumbrian region, with many known sites linked to religious activity, and the lack of distinctive artefacts means that settlement patterns and the

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<sup>8</sup> Cumberland and Westmorland Antiquarian and Archaeological Society, Lake District National Park Authority, & Cumberland and Westmorland & Furness Unitary Authorities. (2026). Section C: Prehistory—Later Bronze Age and Iron Age. In *Cumbria and Lake District Research Framework for the Historic Environment*.

<sup>9</sup> Cumberland and Westmorland Antiquarian and Archaeological Society, Lake District National Park Authority, & Cumberland and Westmorland & Furness Unitary Authorities. (2026). Section D: Roman. In *Cumbria and Lake District Research Framework for the Historic Environment*.

broader social and political changes of the period are difficult to observe archaeologically. From the early 5th century AD to the Norman Conquest, there is generally limited visible evidence for settlement, farming, craft activity, or wider economic activity in the region<sup>10</sup>.

The most recognisable remains from the period are the large number of carved stone monuments associated with medieval parish churches, particularly in the Eden Valley and along the west coast. These monuments show a mixture of cultural and artistic influences such as church organisation, which has developed into the parish system that is recognised today. Political shifts to the north and south from the ninth century onwards did not stabilise until the 13th century, and Cumbria's position, being geographically remote from Westminster and close to or even sometimes within the Scottish borders, likely had a major impact on how the region was governed and how communities lived. Fortified farmsteads and defended settlements are a prominent feature of the regional landscape<sup>11</sup>.

There are five Medieval assets located within the 1 km Study Area, comprising two parks (Firbank, SMR4030; and New Hutton, SMR6813), a medieval market cross (SMR5489), a group of standing stones (SMR4031), and a drainage feature on Firbank Fell (SMR18595). These assets span a considerable chronological range, with several showing evidence of use, adaptation, or reorganisation across both the medieval and post-medieval periods. Together they reflect patterns of local land management, agricultural improvement, community activity, and illustrate how certain features such as parks, boundary stones, and route-side markers remained in use or were modified over successive centuries.

### 1.5.4 Post-Medieval & Modern

Religious and political upheavals of the 16<sup>th</sup> century, the Civil War and new governmental systems of the 17<sup>th</sup> century, and expanding overseas connections and technological changes of the 18<sup>th</sup> century saw significant transformation in the region. Rapid industrialisation of the 19<sup>th</sup> century reshaped Cumbria's economy, transport networks, and social structures, despite the rural character of the region today. The 20<sup>th</sup> and early 21<sup>st</sup> centuries offered opportunities for agricultural development

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<sup>10</sup> Cumberland and Westmorland Antiquarian and Archaeological Society, Lake District National Park Authority, & Cumberland and Westmorland & Furness Unitary Authorities. (2026). Section E: Early medieval. In *Cumbria and Lake District Research Framework for the Historic Environment*.

<sup>11</sup> Cumberland and Westmorland Antiquarian and Archaeological Society, Lake District National Park Authority, & Cumberland and Westmorland & Furness Unitary Authorities. (2026). Section F: Medieval. In *Cumbria and Lake District Research Framework for the Historic Environment*

alongside rural and urban industry, resource extraction, craft production, and wider political, social, economic, and architectural change<sup>12</sup>.

There are 25 Post-Medieval and Modern assets within the 1 km Study Area. In the Study Area, the archaeological record of these eras is dominated by extractive and industrial activity, represented by an extensive cluster of quarries, gravel pits, and small-scale extraction sites across Lambrigg, Firbank, New Hutton, and Docker. These include multiple workings at Green Dike, Kiln Head, Wythmoor, Lambrigg Fell, Roan Edge, and Holme Park, alongside associated features such as trackways, field boundaries, and ridge and furrow cultivation surviving from earlier agricultural phases. A water-powered corn mill and several quarry-related buildings further illustrate the mixed rural and industrial character of the landscape. Collectively, these assets reflect the rapid expansion of quarrying and related industries from the post-medieval period onwards, demonstrating how the exploitation of local stone and gravel became a major driver of landscape change and economic activity in the region.

## 1.6 Archaeological and Historical Potential

The 1 km Study Area is shown in **Figure 11.1**. Including assets of unknown date, a total of 35 assets has been identified through preliminary consultation of the WFC HER.

Direct (Physical) Impacts to the heritage resource are limited to the footprint of infrastructure within the site boundary. Direct (Physical) Impacts are not to be expected wholesale across the full extent of the Development but are limited to areas of ground disturbance associated with construction and/or landscaping. Direct (Physical) Impacts are physical alterations which may affect either known sites or currently unknown buried and otherwise unrecorded archaeology. These impacts may damage or destroy archaeological features and are usually permanent and irreversible.

This report does not attempt to assess the magnitude of impact or effects to these heritage assets. Discussions around magnitude of impact, effects as well as mitigation strategies are discussed within Chapter 11 of the Scoping Report. This report does however present the risk of loss through the development of the Gazetteer.

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12 Cumberland and Westmorland Antiquarian and Archaeological Society, Lake District National Park Authority, & Cumberland and Westmorland & Furness Unitary Authorities. (2026). Section G: Post medieval and modern. In Cumbria and Lake District Research Framework for the Historic Environment

### 1.6.1 Potential for Additional Unknown Assets

Beyond the known assets, there is considerable potential for previously unrecorded archaeological remains to survive within the area. Multi-period use of the landscape, combined with later agricultural and industrial activity, increases the likelihood that earlier features, particularly prehistoric settlement traces, Romano-British rural activity, and medieval or post-medieval land-use remains, may be buried or obscured. The limited investigation across much of the upland terrain, and the often-subtle character of earlier archaeological deposits, means that further unknown assets may be present, including features detectable only through intrusive works or modern survey techniques such as geophysical investigation or LiDAR analysis.

A summary of archaeological potential broken down by period is presented in **Table 2**

**Table 2 Summary of Archaeological Potential of the Proposed Development**

| Period Name      |                | Potential  |
|------------------|----------------|------------|
| Early Prehistory | Paleolithic    | Negligible |
|                  | Mesolithic     | Negligible |
|                  | Neolithic      | Negligible |
| Later Prehistory | Bronze Age     | Low        |
|                  | Iron Age       | Low        |
| Roman            |                | Moderate   |
| Medieval         | Early Medieval | Moderate   |
|                  | Later Medieval | Moderate   |
| Post -Medieval   |                | High       |
| Modern           |                | High       |

## 1.7 Conclusion

The archaeological and historical baseline for the Lambrigg Repowering and Extension project demonstrates that the Site lies within a landscape containing evidence for multi-period activity, ranging from prehistoric land use to extensive post-

medieval and modern industrial extraction. While no designated heritage assets are present within 1 km of the Site, the 35 identified non-designated assets reflect a long history of agricultural, settlement, and industrial expansion.

The Site retains carrying levels of archaeological potential depending on period, with the greatest likelihood of encountering remains relating to post-medieval and modern quarrying and associated infrastructure. However, the multi-period character of the surrounding landscape, combined with limited previous investigation, means that the potential for previously unrecorded prehistoric, Romano-British, and medieval remains cannot be discounted. Subsurface features may survive beneath later land-use layers, particularly in areas not extensively disturbed.

This baseline will support the forthcoming ES by identifying where direct physical impacts may occur and where further design refinement, mitigation, or investigation may be warranted. It provides a foundation for assessing both known heritage assets and the potential for encountering unknown archaeology during the phases of the Proposed Development.

**Table 3 Assets Within the 1km Study Area**

| List entry number | Name                                             | Type        | Period                    | Easting | Northing |
|-------------------|--------------------------------------------------|-------------|---------------------------|---------|----------|
| 2093              | New Hutton Rectangular Enclosure                 | Non-Des/SMR | Unknown                   | 357700  | 493300   |
| 4030              | Firbank Park, Firbank                            | Non-Des/SMR | Medieval to Post-Medieval | 360000  | 495000   |
| 4031              | Goody Cross Stones, Galloway Yeat, Firbank       | Non-Des/SMR | Medieval                  | 359000  | 493000   |
| 5489              | Cold Stean (Call Stone) Market Cross, New Hutton | Non-Des/SMR | Medieval                  | 359500  | 492790   |
| 6813              | Hutton Park, New Hutton                          | Non-Des/SMR | Medieval to Post-Medieval | 357600  | 492500   |
| 14631             | Lambrigg Head Gravel Pit, Lambrigg               | Non-Des/SMR | Post-Medieval             | 360170  | 495980   |

| List entry number | Name                                     | Type        | Period        | Easting | Northing |
|-------------------|------------------------------------------|-------------|---------------|---------|----------|
| 14632             | Lakethwaite Pit 1, Firbank               | Non-Des/SMR | Post-Medieval | 360300  | 495600   |
| 14633             | Lakethwaite Pit 2, Firbank               | Non-Des/SMR | Post-Medieval | 360390  | 495600   |
| 14634             | Green Dike Quarry, Firbank               | Non-Des/SMR | Post-Medieval | 360300  | 495120   |
| 14635             | Green Dike Quarry, Firbank               | Non-Des/SMR | Post-Medieval | 360480  | 495160   |
| 14636             | Green Dike Quarry, Firbank               | Non-Des/SMR | Post-Medieval | 360600  | 495100   |
| 14637             | Green Dyke Quarry, Firbank               | Non-Des/SMR | Post-Medieval | 360770  | 495090   |
| 17424             | Green Dykes Gravel Pits, Firbank         | Non-Des/SMR | Post-Medieval | 360430  | 494910   |
| 17425             | Green Dykes Quarry, Firbank              | Non-Des/SMR | Post-Medieval | 360420  | 494960   |
| 17506             | Lambrigg Fell Quarries, Lambrigg         | Non-Des/SMR | Post-Medieval | 357840  | 494880   |
| 17508             | Old Scotch Road Quarry, Firbank          | Non-Des/SMR | Modern        | 359900  | 493180   |
| 17509             | Sparishaw / Roan Edge Quarry, New Hutton | Non-Des/SMR | Post-Medieval | 358650  | 492900   |
| 17510             | Docker Fell Quarry, Docker               | Non-Des/SMR | Post-Medieval | 357400  | 493880   |
| 17538             | Lambrigg Mill, Lambrigg                  | Non-Des/SMR | Post-Medieval | 359840  | 495630   |
| 17542             | Kitchengill Gravel Pit, Lambrigg         | Non-Des/SMR | Post-Medieval | 357200  | 495280   |

| List entry number | Name                                                   | Type        | Period                        | Easting | Northing |
|-------------------|--------------------------------------------------------|-------------|-------------------------------|---------|----------|
| 17543             | Kiln Head Quarries, Lambrigg                           | Non-Des/SMR | Post-Medieval                 | 357780  | 495410   |
| 17544             | Wythmoor Quarries, Lambrigg                            | Non-Des/SMR | Post-Medieval                 | 358500  | 495500   |
| 17546             | Holme Park Farm Quarry, Lambrigg                       | Non-Des/SMR | Post-Medieval                 | 359540  | 495530   |
| 17547             | Powson Bridge Gravel Pit, Lambrigg                     | Non-Des/SMR | Post-Medieval                 | 359900  | 495260   |
| 18592             | Lakethwaite Enclosures, Firbank                        | Non-Des/SMR | Prehistoric to Romano-British | 360340  | 495700   |
| 18593             | Trackway, Lakethwaite, Firbank                         | Non-Des/SMR | Unknown                       | 360470  | 495740   |
| 18594             | Lakethwaite Ridge and Furrow, Firbank                  | Non-Des/SMR | Post-Medieval                 | 360630  | 495750   |
| 18595             | Firbank Fellside Drain, Firbank                        | Non-Des/SMR | Medieval-Post-Medieval        | 360470  | 495330   |
| 18614             | Field Boundary, Old Scotch Road, Lakethwaite, Lambrigg | Non-Des/SMR | Post-Medieval                 | 360150  | 495770   |
| 44463             | New Hutton Cord Rig                                    | Non-Des/SMR | Bronze Age                    | 359630  | 492440   |
| 44464             | New Hutton Trig Point                                  | Non-Des/SMR | Bronze Age to Modern          | 359660  | 492480   |
| 44465             | Lambrigg Hut Circle?                                   | Non-Des/SMR | Bronze Age to Post-Medieval   | 359630  | 493460   |
| 44466             | New Hutton Enclosure                                   | Non-Des/SMR | Bronze Age                    | 357810  | 492340   |

| List entry number | Name                             | Type        | Period        | Easting | Northing |
|-------------------|----------------------------------|-------------|---------------|---------|----------|
| 45328             | Latter Howe Quarries, New Hutton | Non-Des/SMR | Post-Medieval | 357860  | 492400   |
| 45329             | Roan Edge Trackway, New Hutton   | Non-Des/SMR | Post-Medieval | 358440  | 492750   |

# Appendix C: Assets Selected for Preliminary Anticipated Risk of Settings Impact

## PRELIMINARY SELECTION OF ASSETS ANTICIPATED TO BE AT RISK OF SETTINGS IMPACT

| Reference | Name                                                                              | Grade | Type               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Period        | Study Area |
|-----------|-----------------------------------------------------------------------------------|-------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| 1007080   | Saucer barrow, 350m east of Middleton Hall                                        | n/a   | Scheduled Monument | This Early Bronze Age saucer barrow comprises a low central mound approximately 12 m in diameter, surrounded by a berm, bank and ditch forming an earthwork roughly 30 m across, with opposed entrances to the north west and south east. Geophysical survey has confirmed an additional buried ring ditch encircling the mound, indicating well preserved sub surface archaeological remains.                                                                                                          | Bronze Age    | 15km       |
| 1007109   | Miller Bridge                                                                     | n/a   | Scheduled Monument | Post-Medieval bridge, located within Kendal town, crossing the river Kent. Possible three-span arched bridge.                                                                                                                                                                                                                                                                                                                                                                                           | Post-Medieval | 15km       |
| 1007128   | Castlehaw Tower, motte and bailey castle and Royal Observer Corps monitoring post | n/a   | Scheduled Monument | Castlehaw Tower comprises the earthwork remains of a medieval motte and bailey castle positioned overlooking Sedbergh and a historic river crossing, consisting of an oval motte approximately 10 m high with associated ditch, partial outer bank, and a western bailey platform measuring around 30 m by 20 m. The monument also contains a subterranean Royal Observer Corps monitoring post from the 1960s, reflecting later re use of the site.                                                    | Medieval      | 15km       |
| 1007129   | Burneside Hall, pele tower and gatehouse                                          | n/a   | Scheduled Monument | Burneside Hall comprises the remains of a medieval fortified hall complex with an associated pele tower and gatehouse, situated on the eastern outskirts of modern Burneside between the Rivers Sprint and Kent—an area of clear strategic and administrative importance in the medieval landscape. Although fragmentary, the surviving structural elements and earthworks retain the legibility of a defended high status residence characteristic of northern England's border security architecture. | Medieval      | 15km       |

| Reference | Name                                        | Grade | Type               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Period                  | Study Area |
|-----------|---------------------------------------------|-------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------|
| 1007130   | Castle Howe motte and bailey castle         | n/a   | Scheduled Monument | Castle Howe comprises the upstanding earthwork remains of a medieval motte and bailey castle positioned on the southern bank of the River Lune near the confluence with Birk Beck. The monument includes a circular motte up to 3.5 m high, a semi circular ditch with surviving rampart, and an irregular bailey enclosure to the south containing exposed stone structural remains.                                                                                                                            | Medieval                | 15km       |
| 1007178   | Watercrock Roman fort and civil settlement  | n/a   | Scheduled Monument | The monument comprises the remains of a Roman fort and its associated civilian settlement (vicus) situated within a pronounced bend of the River Kent, where the fort survives as a sub square enclosure defined by banks and ditches measuring approximately 136 m by 117 m. Excavations have revealed multiple phases of occupation from AD 90–369, including timber and later stone defences, gate structures, a barrack block, and extensive vicus remains indicating both domestic and industrial activity. | Romano-British          | 15km       |
| 1007240   | Low Borrowbridge Roman fort                 | n/a   | Scheduled Monument | Low Borrowbridge comprises the remains of a Roman fort and associated civilian settlement situated on a spur formed by the River Lune and Barrow Beck, preserved as earthworks and buried features within multiple areas of protection. The fort is a parallelogram shaped enclosure defined by ramparts, multiple ditches and a surviving gateway, with surrounding vicus features including a bath house, cemetery, timber buildings and industrial activity identified through excavation.                    | Roman                   | 15km       |
| 1007255   | Settlement 440yds (400m) N of Cunswick Hall | n/a   | Scheduled Monument | The monument comprises the remains of a prehistoric to early medieval settlement located on elevated ground north of Cunswick Hall, expressed through low earthworks and buried archaeological features that indicate long term occupation and land use. Its position between the ridgelines north of Kendal                                                                                                                                                                                                     | Prehistoric to Medieval | 15km       |

| Reference | Name                                                 | Grade | Type               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                  | Period      | Study Area |
|-----------|------------------------------------------------------|-------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
|           |                                                      |       |                    | provides a strategic and historic vantage across the surrounding landscape.                                                                                                                                                                                                                                                                                                                                                                  |             |            |
| 1007276   | Settlement on Dry How Pasture                        | n/a   | Scheduled Monument | The monument consists of the remains of a prehistoric settlement occupying a prominent position on the south west facing ridge of Dry Howe, overlooking the Bannisdale Beck valley. Surviving as low earthworks and buried features, the site forms part of a wider prehistoric landscape characterised by inter visible settlements and activity areas along the valley.                                                                    | Prehistoric | 15km       |
| 1007277   | Settlement below Lamb Pasture                        | n/a   | Scheduled Monument | The monument comprises the remains of a prehistoric settlement situated on the south west facing slope below Lamb Pasture, overlooking the Bannisdale Beck valley. Surviving as low earthworks and buried features, the site forms part of a wider prehistoric landscape characterised by dispersed settlement activity along the valley sides.                                                                                              | Prehistoric | 15km       |
| 1008263   | Castlesteads small multivallate hillfort on The Helm | n/a   | Scheduled Monument | The monument comprises a small multivallate hillfort occupying the summit of The Helm, where the steep eastern and western slopes provide natural defence. It includes a compact enclosure with three levelled hut platforms and surviving defensive earthworks—double banks and ditch to the north, a single bank to the south, and evidence of former enclosing works to the east and west—alongside rock cut basins interpreted as wells. | Prehistoric | 15km       |
| 1008900   | Castle Howe motte and bailey                         | n/a   | Scheduled Monument | Castle Howe comprises the upstanding earthwork remains of a late 11th century motte and bailey castle positioned on a limestone spur overlooking the Kent valley and the historic core of Kendal. The monument includes a steep sided motte approximately 11 m high, flanking ditches and outer banks, and a triangular bailey enclosure (“Battle Place”) defined by both natural slopes and modified ground.                                | Medieval    | 15km       |

| Reference | Name                                                                                                    | Grade | Type               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Period         | Study Area |
|-----------|---------------------------------------------------------------------------------------------------------|-------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------|
| 1008901   | Kendal Castle and associated earthworks, and earlier ringwork                                           | n/a   | Scheduled Monument | Kendal Castle comprises the upstanding remains of a 13th century enclosure castle built directly over an earlier late 12th century ringwork, all situated on the summit of a prominent glacial moraine overlooking the Kent valley and the historic town of Kendal. The monument includes substantial earthworks of the ringwork—ditch, outer bank and bailey—and surviving stone elements of the later castle, including curtain wall fragments, towers, vaulted cellars and traces of internal buildings. | Medieval       | 15km       |
| 1011141   | Castle Folds Romano-British defended stone hut circle settlement and medieval shieling                  | n/a   | Scheduled Monument | Castle Folds occupies an inaccessible flat topped limestone knoll on Great Asby Scar and comprises the remains of a heavily defended Romano British stone built settlement enclosed by a thick stone wall, with at least twelve circular or oval hut platforms arranged around the interior. The monument also contains a later rectangular medieval shieling set against the southern enclosure wall, reflecting multi period use of the site.                                                             | Romano-British | 15km       |
| 1021247   | Medieval moated site and associated building platform 620m and 700m south east of Bannisdale Low Bridge | n/a   | Scheduled Monument | The monument comprises a well preserved medieval moated site situated on the floodplain of Bannisdale Beck, consisting of a rectangular island approximately 38 m by 36 m enclosed by a dry moat with inner and outer banks surviving on multiple sides. A separate building platform to the south east contains the boulder foundations of a two roomed stone structure, indicating associated activity extending beyond the moated island.                                                                | Medieval       | 15km       |
| 1145642   | Castle Dairy, 26 Wildman Street                                                                         | I     | Listed Building    | Castle Dairy is a medieval farmhouse, probably of 14th century origin, substantially remodelled in the mid 16th century for Anthony Garnett, with numerous dated architectural features surviving. Now a restaurant, the grade I listed building retains its coursed rubble construction, stone flag roofs and cross wing                                                                                                                                                                                   | Medieval       | 15km       |

| Reference | Name                   | Grade | Type            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Period                    | Study Area |
|-----------|------------------------|-------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------|
|           |                        |       |                 | plan, representing one of Kendal's earliest and most intact domestic structures.                                                                                                                                                                                                                                                                                                                                                                                                                                               |                           |            |
| 1145684   | Abbot Hall Art Gallery | I     | Listed Building | Abbot Hall is a finely executed mid 18th century town house of 1759, attributed to John Carr of York, built for Colonel George Wilson and distinguished by its symmetrical seven bay façade, refined classical detailing and high quality stone construction. Now an art gallery, the grade I listed building retains an exceptional interior, including Doric columned entrance hall, decorative plasterwork, and an elegant curved stair, representing one of Kendal's most architecturally significant Georgian residences. | Post-Medieval             | 15km       |
| 1145774   | Church Of St Mary      | I     | Listed Building | St Mary's Church is a large and architecturally significant parish church with fabric dating from the 12th to 16th centuries, featuring Romanesque arcades, later medieval aisles, and a four storey embattled west tower. The grade I listed building retains important medieval and post medieval fittings, and is recognised as the principal historic church of South Westmorland, with its Durham influenced Romanesque arcade of particular note.                                                                        | Medieval to Post-Medieval | 15km       |
| 1318962   | Sizergh Castle         | I     | Listed Building | Sizergh Castle is a complex multi period fortified manor centred on a hall with 15th century south tower and earlier hall range, subsequently expanded with 16th century west wings and later Gothic and 19th century alterations. The limestone rubble complex retains significant medieval and post medieval fabric, including vaulted undercrofts, a mural stair, richly panelled interiors, and notable carved overmantles, reflecting its long development as the seat of the Strickland family.                          | Post-Medieval             | 15km       |
| 1319009   | Church Of Holy Trinity | I     | Listed Building | This large medieval parish church, established by the early 13th century and subsequently expanded, is notable for its exceptionally wide plan, double aisles, and prominent castellated                                                                                                                                                                                                                                                                                                                                       | Medieval                  | 15km       |

| Reference | Name                | Grade | Type            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Period                    | Study Area |
|-----------|---------------------|-------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------|
|           |                     |       |                 | Perpendicular detailing resulting from comprehensive 19th century restoration. The grade I listed building contains significant chapels, tombs, and memorials associated with the Bellingham, Parr and Strickland families, forming a major historic landmark on the riverside.                                                                                                                                                                                                                                                                                                                                                                |                           |            |
| 1350017   | Levens Hall         | I     | Listed Building | This predominantly 16th century house, incorporating an earlier medieval core, was extensively remodelled in the late 17th century for Colonel James Grahme and later altered in the 18th and early 19th centuries, resulting in a complex multi phase building with characteristic mullioned and transomed windows, decorative rainwater heads, and substantial chimneys. The grade I listed property retains richly detailed plasterwork and panelling internally and is closely associated with nationally important late 17th century formal gardens laid out by Guillaume Beaumont, which form an essential part of its historic setting. | Medieval to Post-Medieval | 15km       |
| 1383978   | Church Of St Andrew | I     | Listed Building | This medieval parish church, originating in the 12th century and significantly expanded in the early 16th century, retains a broad aisled plan, Perpendicular detailing, and a later 18th century west tower, with much of the fabric renewed in 1889. The grade II* listed building contains notable surviving furnishings, including 17th and 18th century pews, pulpit, and memorials, and remains an important historic landmark within the village.                                                                                                                                                                                       | Medieval                  | 15km       |
| 1384191   | Church Of St Andrew | I     | Listed Building | This large parish church, largely rebuilt around 1500 but incorporating earlier medieval fabric, has a broad aisled plan with a three stage west tower, embattled parapets and characteristic Perpendicular style windows, with extensive restoration undertaken in 1886–87. The interior retains varied arcades of differing dates, Norman and later doorways, and a range of historic fittings and monuments, contributing to its significance as an important focal building within the settlement.                                                                                                                                         | Post-Medieval             | 15km       |

| Reference | Name                                  | Grade | Type            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Period   | Study Area |
|-----------|---------------------------------------|-------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|
| 1086557   | Church Of St Peter                    | II*   | Listed Building | This parish church is a multi period building with origins in the 12th century, substantially rebuilt and extended between the 14th and early 16th centuries, and later altered following a 17th century fire and a comprehensive 19th century restoration by Paley and Austin. Its limestone rubble construction, Perpendicular detailing, added west tower and chapels, and surviving medieval fabric contribute to its significance as a key historic ecclesiastical building within the settlement. | Medieval | 15km       |
| 1145428   | Church Of All Saints                  | II*   | Listed Building | The parish church contains fabric from the late 12th century onward, including an early C16 castellated west tower, a 1607 south porch, late medieval roof timbers, and restored late C12 arcades. Later phases include the 1878 Paley & Austin rebuilding of the chancel and north aisle, with surviving historic fittings such as a 1662 font, trefoil arched piscina, 1695 Royal Arms, and a set of C16–C17 bells.                                                                                   | Medieval | 15km       |
| 1289216   | Burneside Hall                        | II*   | Listed Building | This large house, now subdivided, is primarily of 14th century origin with later alterations, retaining stone rubble construction, cross wing hall plan, mullioned windows, and a ruined north solar block with vaulted basements and medieval stair doorways. The interior preserves original pointed arched doors, a pre 17th century panelled screen to the former first floor hall, and remains of 17th century plasterwork.                                                                        | Medieval | 15km       |
| 1311671   | Selside Hall And Attached Outbuilding | II*   | Listed Building | This late 14th century house, altered in the 16th and 18th centuries with a small 19th century extension, is an L plan building of roughcast stone featuring mullioned windows with tracery, a gabled porch with pointed entrance, cross axial chimney stacks, and a south wing with thick medieval walls. Internally, it retains a barrel vaulted ground floor, early 16th century timber and fireplace elements, early 18th century inserted stonework, and a well stair, with traditions of a priest | Medieval | 15km       |

| Reference | Name                 | Grade | Type            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Period        | Study Area |
|-----------|----------------------|-------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
|           |                      |       |                 | hide and former chapel use linked to the recusant Thornburgh family.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |            |
| 1312117   | Preston Patrick Hall | II*   | Listed Building | This late 14th century house with later C15/C16, C17 and subsequent alterations is a hall and cross wing complex constructed of slobbered rubble with sandstone dressings, retaining traceried medieval windows, chamfered beams, fine stone fireplaces, Caernarvon arched doorways and two stone newel stairs. Later internal features include an early C18 oak dog leg stair and a 5 bay king post roof to the "Court Room" in the east wing.                                                                                                | Medieval      | 15km       |
| 1335928   | Church Of All Saints | II*   | Listed Building | This 14th century chapel, later altered in the 17th century and extended with a vestry in 1894, is a simple roughcast stone church retaining a mixture of medieval and post medieval window forms, a west tower with C14 doorway, and a modest single vessel nave and chancel. Built originally as the chapel to Killington Hall, it contains a range of historic interior features—including medieval stained glass, C17 and C19 fittings, and a timber font—reflecting its long ecclesiastical development before becoming parochial in 1585 | Post-Medieval | 5km        |
| 1384145   | Crook Of Lune Bridge | II*   | Listed Building | This narrow multi span bridge, believed to date from the 16th century or earlier, comprises two slightly asymmetrical segmental arches built of mixed rubble with thin voussoirs and stone slate arch bands, rising over a central pier with triangular cutwaters. Forming part of an historic north–south droving route through Lunesdale, it remains a picturesque and highly characteristic rural crossing retaining strong evidential and historic value.                                                                                  | Post-Medieval | 5km        |
| 1384164   | High Oaks            | II*   | Listed Building | This late 17th century L plan house, dated 1706, retains a well preserved rubble façade with former mullioned windows, a                                                                                                                                                                                                                                                                                                                                                                                                                       | Post-Medieval | 5km        |

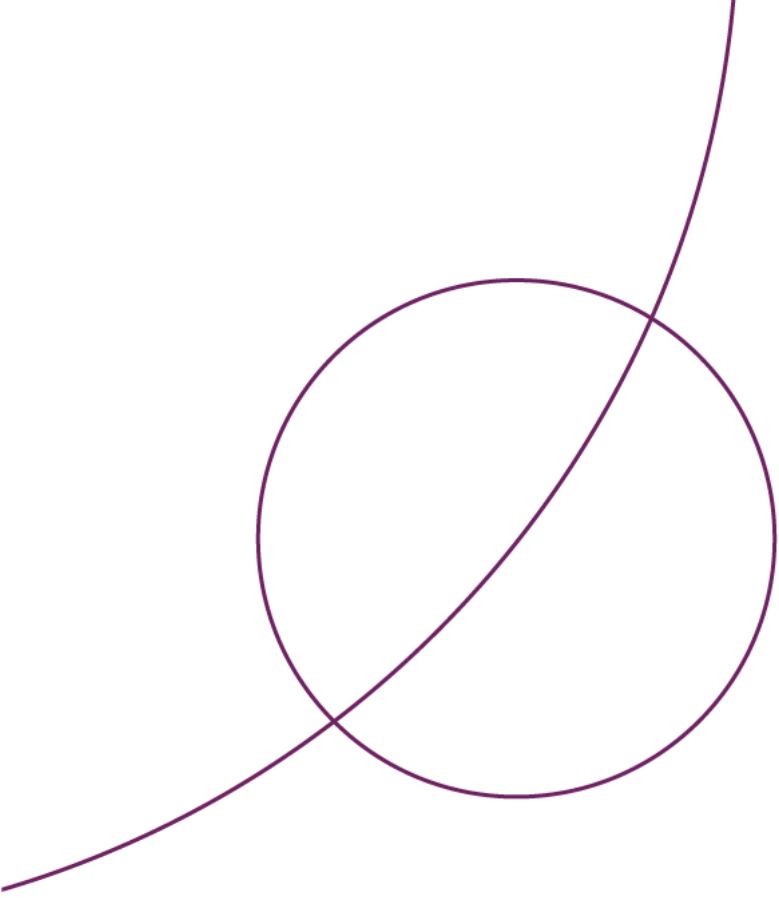
| Reference | Name                                    | Grade | Type            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Period        | Study Area |
|-----------|-----------------------------------------|-------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
|           |                                         |       |                 | characterful gabled porch with enriched detailing, and gable end chimneys. Internally, it contains an exceptionally complete suite of original features—including panelled partitions, smokehood bressumer, spice cupboard, panelled overmantel and a full height open well staircase—making it a particularly significant example of early post medieval vernacular domestic architecture.                                                                                                                                             |               |            |
| 1384166   | The Hill                                | II*   | Listed Building | This early 18th century house, dated 1712, is a three storey rubble building with a stuccoed front, sash windows and gable end chimneys, retaining its original oak planked entrance door and dated panel. Its simple two unit plan with rear wing and surviving historic fabric make it a characteristic example of vernacular domestic architecture of the period, with noted historic associations to dermatologist Robert Willan.                                                                                                   | Post-Medieval | 5km        |
| 1086874   | Church Of St John                       | II    | Listed Building | This 1837 church, with a 1869 west tower by George Webster, is built of stone rubble with ashlar dressings and features a five bay nave, gabled south porch, lancet windows and an apsidal east end. The interior includes braced beam ceilings with pendants, a traceried tower arch screen, a small octagonal font, a roll moulded apse arch, and 19th century stained glass.                                                                                                                                                         | Post-Medieval | 5km        |
| 1086875   | Grayrigg Foot With Attached Outbuilding | II    | Listed Building | This mid to late 17th century L plan house, altered in the early 18th century, is built of rubble (roughcast to the main elevation) and retains drip courses, varied casement and mullioned window openings, gable and cross axial stacks, and associated outbuildings including pigsties and lean to structures. Internally, it preserves chamfered beams, a staircase with turned balusters and moulded handrails, blocked wooden mullioned windows with leaded glazing, attic trusses, and upper cruck trusses within the east wing. | Post-Medieval | 5km        |

| Reference | Name                 | Grade | Type            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Period        | Study Area |
|-----------|----------------------|-------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| 1086888   | Bracken Hall         | II    | Listed Building | This early to mid 18th century roughcast stone house has a four bay east elevation with drip course, wooden cross mullioned windows, a 10 fielded panel entrance door with strap hinges, and gable end stacks, with a rear outshut under a catslide roof. Internally, it retains early panelled partitions, timber doors with historic hinges, a stair with square newels and turned balusters, and decorative first floor and attic joinery including fielded panel cupboards. | Post-Medieval | 5km        |
| 1086889   | Bracken Hall Cottage | II    | Listed Building | This probable 18th century roughcast stone house has a simple two bay east elevation with chamfered timber framed windows, a gabled porch with segmental arched opening, wide boarded doors, and a lean to outshut to the rear. Surviving internal features include wide boarded doors and simple vernacular joinery.                                                                                                                                                           | Post-Medieval | 5km        |
| 1087289   | Toll Bar Cottage     | II    | Listed Building | This mid 18th century toll house, now a dwelling, is built of wet dashed rubble with graduated slate roofs and has a distinctive two storey curved gable end flanked by single storey outshuts. The roadside elevation retains stone mullioned casement windows, later sash windows to the rear wing, and a wet dashed cross ridge chimney.                                                                                                                                     | Post-Medieval | 5km        |
| 1087290   | Midge Monument       | II    | Listed Building | This mid 18th century monument is a small square rubble structure approximately 15 ft high with a pyramidal cap (now broken), each face containing a rectangular aperture. An inscribed slab dated 1766—now re set on a nearby building—records its commemorative purpose as a marker associated with the horse “Midge.”                                                                                                                                                        | Post-Medieval | 5km        |
| 1087294   | Church Of St Stephen | II    | Listed Building | This 1828–29 parish church by George Webster, with a later 1869 west tower, is constructed of pebble dashed rubble on a battered plinth with ashlar dressings and features a five bay nave,                                                                                                                                                                                                                                                                                     | Post-Medieval | 5km        |

| Reference | Name                                     | Grade | Type            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Period        | Study Area |
|-----------|------------------------------------------|-------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
|           |                                          |       |                 | stepped crenelated tower and a single bay chancel, all lit by pointed headed lancet windows. The interior retains original numbered pews, a western gallery on a timber arcade, a polygonal pulpit, small marble font, memorials by Webster and Airey, and high quality early 20th century stained glass.                                                                                                                                                                                                                                                                                                          |               |            |
| 1311740   | Benson Hall                              | II    | Listed Building | This farmhouse, originating in the 16th century with 18th and 19th century extensions, is constructed of stone rubble with slate roofs and retains a three storey, three bay west elevation, sash windows, gable end stacks, a spiral stair, vaulted ground floor chamber, and multiple blocked mullioned windows with surviving leaded glazing. Internally, early features include draw bar holes to a former external entrance, chamfered beams, 6 fielded panel doors, an open string stair with turned balusters, and evidence of historic concealed spaces such as a possible priest hide or storage chamber. | Post-Medieval | 5km        |
| 1311996   | Docker Viaduct(That Part In Lambrigg Pc) | II    | Listed Building | This 1846 viaduct by Joseph Locke for the Lancaster–Carlisle Railway is constructed of rock faced limestone with brick intradoses and comprises six segmental arches carried on battered piers with impost bands. It retains projecting parapets with iron railings and spans Flodder Beck as part of the mid 19th century railway landscape.                                                                                                                                                                                                                                                                      | Post-Medieval | 5km        |
| 1312144   | Grayrigg Hall                            | II    | Listed Building | This early to mid 18th century farmhouse is built of stone rubble with areas of roughcast and has a simple two storey, four bay east elevation, with small paned casements under flat arches, a gabled timber porch, gable end stacks and a recessed lower extension forming the fourth bay. The building retains typical vernacular features including cross mullioned casements, lean to outshuts, and varied fenestration to the side and rear elevations; interior not inspected.                                                                                                                              | Post-Medieval | 5km        |

| Reference | Name                      | Grade | Type            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Period        | Study Area |
|-----------|---------------------------|-------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| 1312147   | Grayrigg Head             | II    | Listed Building | This early 19th century roughcast stone house has a symmetrical three bay north east façade with hipped slate roof, sash windows, a central Tuscan columned porch, and later rear wings with rock faced sandstone quoins. Internally, it retains a notable flying stair on an oval plan with stick balusters, alongside other elements of early 19th century joinery.                                                                                                                          | Post-Medieval | 5km        |
| 1335731   | Strawberry Bank Farmhouse | II    | Listed Building | This late 16th /early 17th century farmhouse with early 18th century additions is constructed of wet dashed rubble with graduated slate roofs and has a symmetrical two storey, three bay frontage dominated by a full height gabled porch with original thick panelled door and ironwork. Internally, surviving features include a blocked segmental arched fireplace with decorative plaster panel above, a full height panelled cupboard with fluted pilasters, and a moulded ceiling beam. | Post-Medieval | 5km        |
| 1335900   | High House Farmhouse      | II    | Listed Building | This late 16th /early 17th century farmhouse with early 18th century additions is constructed of narrow coursed rubble under a slate roof and presents a two storey, four bay elevation with a projecting gabled porch, small paned casements, and a recessed lower bay. Internally, surviving features include chamfered beams, a heck partition, and a dated spice cupboard with fielded panelled door and inscribed drawer                                                                  | Post-Medieval | 5km        |
| 1335921   | Shaw End                  | II    | Listed Building | This early 19th century U plan house, built of rubble with partial plastering and slate roofs, has a two storey, seven bay main range with surviving sash windows, a central tetrastyle glazed portico, and a large rear stair window. The main block is derelict, retaining no floors but remnants of stair structure and chimney stacks, while the attached service ranges to the north and west remain more intact with sash windows and slate roofs.                                       | Post-Medieval | 5km        |

| Reference | Name                      | Grade | Type                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Period        | Study Area |
|-----------|---------------------------|-------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| 1000667   | Levens Hall               | I     | Parks and Gardens   | Levens Hall comprises late 17th /early 18th century parks and formal gardens designed by Guillaume Beaumont (1689–1712), retaining the key structural elements and layout shown on early plans of 1730. Centred on a grade I listed Elizabethan house with associated designed landscapes, topiary gardens, avenues, and early examples of ha has, the estate remains a well preserved historic composition within a rural agricultural setting.                                                             | Post-Medieval | 15km       |
| 1452615   | The English Lake District | n/a   | World Heritage Site | The English Lake District is a large upland cultural landscape shaped by glaciated landforms and over a thousand years of agro pastoral farming, characterised by stone walled fields, distinctive local sheep breeds, dispersed farmsteads and a long tradition of landscape appreciation. Its natural and cultural elements, including villas, designed landscapes, and early conservation movement landmarks, form a unified and globally significant landscape of exceptional scenic and cultural value. | Post-Medieval | 15km       |



Thank you



**nadara**